

# RADIO

THE NATIONAL TRADE MAGAZINE

JULY 1931

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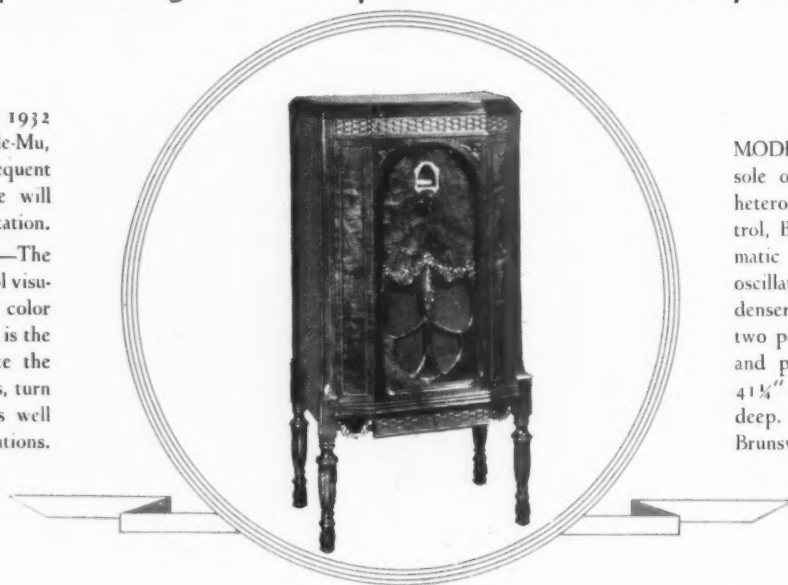
*Superheterodyne*  
*by* **SILVER-**  
**MARSHALL**

# A MODEL FOR EVERY CUSTOMER

*A complete price range . . . plus a retail sales plan that works*

**TUBES**—The Brunswick 1932 models use Pentode, Variable-Mu, and Screen Grid Tubes. Subsequent advertisements and literature will define their number and adaptation.

**COLOR TONE CONTROL**—The Brunswick Color Tone Control visualizes musical tone in actual color on the tuning scale . . . Gold is the normal setting. To accentuate the treble, turn to blue . . . bass, turn to red . . . You can SEE as well as HEAR these tone variations.



**MODEL 17**—Lowboy walnut console of distinctive design. Superheterodyne, 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage and power detector. Dimensions 41½" high, 21¼" wide, and 13½" deep. List price, complete with Brunswick tubes . . . \$149.50

Brunswick instruments have ALWAYS been famous for high quality, mechanical excellence and exquisite cabinets . . . as near perfection as human skill in design and craftsmanship can attain.

AND NOW . . . Brunswick offers you for the 1931-1932 season the most complete line of instruments in its history . . . list prices \$79.50 to \$265.00, complete with Brunswick tubes . . . plus a RETAIL SALES PLAN that will help you move these

instruments off your floors and into the homes of satisfied customers . . . at a profit!

There IS a difference in the musical quality of radio. Brunswick will prove it to your satisfaction, and you can easily prove it to your customer's satisfaction through the new Brunswick "Step-Ladder Sales Plan". Ask us about it. Its simplicity will surprise you . . . Its results will amaze you!

**MODEL 12**—A sensationally new idea in radio cabinetry. Miniature high-boy console. Recessed panel of rare crocheted walnut veneer, giving beautiful two-tone effect. Hand-carved grille. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 9" dynamic speaker and power detector. Dimensions 43" x 17¼" x 10¼". List price, complete with Brunswick tubes . . . \$99.50

**MODEL 16**—Lowboy console, finished in American Walnut. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 12" dynamic speaker and power detector. Dimensions 38½" x 19½" x 14½". List price, complete with Brunswick tubes . . . \$119.50

**MODEL 42**—Automatic Panatropé-with-Radio. Plays 20 ten-inch records without attention. Also plays twelve-inch records manually. List price, complete with Brunswick tubes and 20 records . . . \$265.00



**MODEL 11**—Table model or midget type, walnut cabinet, carved grille. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 9" dynamic speaker, power detector. Dimensions 22½" x 17½" x 10½". List price, complete with Brunswick tubes . . . \$79.50

**MODEL 24**—Graceful six-egged highboy cabinet with arched French doors, in matched ribbon walnut and high-lighted matched burled walnut, hand carved and fluted legs. Superheterodyne 9 tubes. Color tone control, Brunswick Uni-Selector, automatic volume control, dynatron oscillator, turret type tuning condenser, 12" super-dynamic speaker, two pentode tubes in output stage, power detector. Dimensions 45½" x 22¼" x 16¼". List price, complete with Brunswick tubes . . . \$169.50

**MODEL 33**—Lowboy combination Radio-with-Panatropé, finished in American walnut. Cabinet lid with balanced stay arm. Panels of matched ribbon walnut, turned and fluted legs. Superheterodyne 7 tubes. Color tone control, Brunswick Uni-Selector, full range volume control, dynatron oscillator, turret type tuning condenser, 12" dynamic speaker and power detector. 39½" x 19½" x 14½". List price, complete with Brunswick tubes . . . \$169.50

BRUNSWICK RADIO CORPORATION, NEW YORK—CHICAGO—TORONTO—Subsidiary of WARNER BROS. PICTURES, INC.

## BRUNSWICK RADIO

"RADIO," July, 1931. Vol. 13, No. 7. Published Monthly by Pacific Radio Publishing Co., Pacific Building, San Francisco, Calif. \$2.00 per year; 25 cents per copy. Entered as second-class matter at Post Office at San Francisco, California, under the Act of March 3, 1879.

# There is No Business Depression For Dealers Handling the PARAMOUNT Line

Sold Direct to Dealers at a Net  
Price of

# \$17.95

Complete with Arcturus Tubes  
\$16.95 in quantities of 6



This is positively the fastest selling set we have ever manufactured. IT SELLS ON SIGHT. Dealers everywhere report they sell them faster than we can supply them. The tone quality is excellent. Get in on the PARAMOUNT LINE immediately.

## The Smallest Radio Made

Size 9 $\frac{3}{8}$ " High, 7 $\frac{1}{2}$ " Wide (inside measurements)

### 1932 Features - - - Sell on Sight

#### 1 Pentode Tubes

Equal to 2-245 plus 1-227. This radio, smallest in size, incorporates the new pentode tube.

#### 2 Full Dynamic Speaker

Perfect tone quality.

#### 3 Screen Grid Circuit

Using 2 screen grid tubes to their utmost efficiency.

#### 7 Quality all Through

Indestructible steel chassis, cadmium plated, oversized power transformers (shielded), heavy service Durham resistors, electrolytic, self-healing filter condenser, 16 mfd., no hum, Cornell oversized bypass condenser and many features found only in high priced sets.

#### 4 Tone Control

The sales talking point of 1931. We use the new full range control.

#### 5 Selectivity Plus Distance

We have reports of distance of 1500 miles.

#### 6 Illuminated Dial

Easy to see.

## NOW IT'S HERE » » » » AN AUTO RADIO

\$49.95  
RETAIL  
PRICE

Complete and installed . . . tubes, batteries, aerial, suppressors, speaker. . . Nothing Else to Buy.

Uses the large pentode tube with three screen grids and full dynamic speaker.

This radio is so small and compact it mounts on the steering wheel of most cars or on the dash. Dealers discount 40%.

Members of  
Los Angeles  
Chamber of Commerce

**LOS ANGELES RADIO MFG., CO.**  
3681 So. San Pedro Street  
Los Angeles, Calif.

Manufacturers of  
Quality Radios  
Since 1925

Tell them you saw it in RADIO

Established  
1917

# RADIO

REGISTERED  
U. S. Pat. Off.

THE NATIONAL TRADE MAGAZINE

VOLUME 13, NUMBER 7

JULY, 1931

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— Pacific Building, San Francisco, Calif.

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## SUBSCRIPTION ORDER

One Year . . . \$2.00. Foreign . . . \$3.00

"RADIO," 415 Lexington Ave., New York, N. Y.

Enter subscription to "RADIO" for.....years at \$2.00 per year.

Name.....Title.....

Street and No.....City and State.....

# TRIAD

HONOR-BUILT



## RADIO TUBES



Licensed by RCA

TRIAD radio tubes are found as standard equipment in most of the midget receivers. Such popularity must be attributed to TRIAD superior quality.

### 3 NEW TRIAD TUBES

Continuing the quality and superiority of the TRIAD Line



TYPE T-235	
Heater Voltage	2.5 Volts
Heater Current	1.75 Amperes
Plate Voltage	250.0 Volts
Screen Voltage	90.0 Volts
Control Grid Voltage	—3.0 Volts
Plate Current	7.0 Milliamperes
Screen Current	Not more than 1/3 plate current
Plate Resistance	300,000 Ohms
Mutual Conductance	1000 Micromhos
Mutual Conductance at —45 Volt bias	15 Micromhos

TRIAD 235 tube has essentially the same characteristics as the 224 type tube but with the additional feature of a plate current grid voltage curve that is very nearly logarithmic. This plate current characteristic makes it very adaptable for use in automatic volume control circuits by virtue of its low percentage of distortion at very high grid bias.

List Price T-235 — 2.20



TYPE T-551	
Heater Voltage	2.5 Volts
Heater Current	1.75 Amperes
Plate Voltage	250.0 Volts
Screen Voltage	90.0 Volts
Control Grid Voltage	—3.0 Volts
Plate Current	6.5 Milliamperes

The TRIAD T-551 is a screen grid variable-mu tube of many refinements. Designed to cut out cross-talk and distortion and reduce static to a minimum, the T-551 can replace the type 224 in most present circuits with decidedly beneficial results.

List Price T-551 — 2.20

TYPE T-551 Continued	
Screen Current	Not more than 1/3 plate current
Plate Resistance	330,000 Ohms
Mutual Conductance	1050 Micromhos
Mutual Conductance at —50 volts grid bias	1 Micromho

TYPE T-247 PENTODE	
Filament Voltage	2.5 Volts
Filament Current	1.5 Amperes
Plate Voltage	250.0 Volts
Plate Current	32.5 Milliamperes
Space Charge Grid Voltage	250 Volts
Space Charge Grid Current	7 Milliamperes
Control Grid Voltage	—16.5 Volts
Amplification Factor	95
Plate Impedance	38,000 Ohms
Mutual Conductance	2500 Micromhos
Power Output	2.5 Watts

The new TRIAD pentode has an extremely high amplification factor combined with a very high power output which results in increasing the maximum sensitivity of a set with an additional gain in volume over the 245 type power tube.

List Price T-247 — 1.90



Triad Manufacturing Co., Inc. Pawtucket, R. I.

West Coast Distributors  
R. J. NOEL COMPANY

SEATTLE  
1518 First Ave., South

LOS ANGELES  
1441 W. Jefferson Boulevard

SAN FRANCISCO  
704 Larkin Street

Tell them you saw it in RADIO

# LIKE GOOD PROGRAMS, GOOD SERVICE DRAWS THE YEAR 'ROUND. . .



Supreme Oscillator Model 70,  
Less Tube and Batteries, Deal-  
ers Net Price, F.O.B. Green-  
wood, Miss. **\$49.75**

Supreme Output-Ohmmeter,  
Dealers Net Price, F.O.B.  
Greenwood, Miss. **\$30.00**

Handsome carrying case of  
hardwood for combined Oscil-  
lator, Output-Ohmmeter, and  
Accessories. Dealers Net Price,  
F.O.B. Greenwood, Miss. **\$5.00**

Tubes and Batteries will be supplied at  
current dealers net prices.

**Choose the Oscillator  
that guarantees these  
super-features**

## Model 70 Exclusive Features

1. The only Oscillator covering all superhe-  
terodyne frequencies between 90 and 550  
kilocycles, as well as all broadcast frequencies  
between 550 and 1500 kilocycles.
2. The only Oscillator calibrated for every  
frequency between 90 and 1500 KC.
3. The only perfectly shielded Oscillator with  
adaptability for external 110-volt D.C. or  
A.C. (of any frequency) power supply, as  
well as for use with its self-contained batteries.
4. The only commercial Oscillator which may  
be operated with or without modulation for  
the beat-note adjustments recommended by  
some radio manufacturers.
5. The only popular priced Oscillator pro-  
vided with a vernier-movement tuning dial  
for fine adjustments.
6. The only commercial Oscillator built into  
a cast aluminum housing, with an aluminum  
panel covered with bakelite, so that the com-  
plete Oscillator can be removed from the  
carrying case when desired.
7. Completely controlled output.
8. Absolutely no readable leakage on the  
most sensitive receivers even when operated  
at full volume.
9. The only popularly priced commercial  
Oscillator accompanied with an attenuated  
output meter, combined with an accurately  
calibrated high-range ohmmeter.

**MODEL 70 DOES**

**SUPREME**  
Testing Instruments  
"SUPREME BY COMPARISON"

Another myth exposed—summer decline in  
radio use! More "Big Time" radio programs  
are booked through the summer of 1931 than  
ever before. It's the show that counts—not the  
season. Take a tip from the most successful  
radio advertisers and cash in on the demand of  
the radio audience for enjoyable service from  
their sets 52 weeks in the year. Like good pro-  
grams, good service draws the year round.  
Supreme Instruments are to the radio-man what  
"TALENT" is to "BIG TIME." They give the  
kind of performance that knows no season, no  
competition, and that insures an ever growing,  
enthusiastic, following.

Meet the challenge of the new season for  
Ultra modern Service with the OSCILLATOR  
which more than fulfills present requirements.  
SUPREME 70—the OSCILLATOR, OUTPUT-  
OHMMETER, provides an unequalled flexibility  
in service ranges. The *only* OSCILLATOR you  
will want after you make comparisons. Ask  
your jobber. Or write for full data.

**MODEL 90  
FIRST IN  
PENTODE ANALYSES**

First to provide all Pentode Tests and An-  
alyses, Model 90 gives a real meaning to the  
standard "SUPREME SERVICE." The *one-*  
*meter* analyser that outperforms *multiple meter*  
instruments that sell for more than twice its low  
cost. This is the Analyzer used and so highly  
recommended by RCA Institutes. Let a demon-  
stration prove how far ahead it really is in its  
field. Ask your jobber—or any  
jobber who seeks to offer his  
trade the best—to let you put it  
thru its paces. Better still, side  
by side, with any other testing  
instrument.

As ever, SUPREME DIAG-  
NOMETER 400-B remains the  
choice of master service man  
and technician. Advertises itself  
by amazing daily performance.

## Satisfaction or Your Money Back

Supreme Instruments sell them-  
selves. But are never sold until  
you are completely satisfied.  
Hence you can return within 10  
days any Supreme instrument  
that does not fully qualify,  
"SUPREME BY COMPARI-  
SON," and get your money back.

## SUPREME INSTRUMENTS CORP.

407 Supreme Bldg., Greenwood, Miss.

Distributors in all Principal Cities. Service Depots in New York, Philadelphia,  
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Foreign Division: 130 West 42nd St., New York City

Cable Address: LOPREH, New York

Tell them you saw it in RADIO

**—and the Analyzer that  
offers these advantages—**

In addition to all regular analytical  
tests, the Model 90 provides—

1. Power pentode analyses without  
special pentode adapters which have  
exposed high potential terminals.
2. Measurements of power pentode  
space charge grid potentials.
3. Measurements of power pentode  
space charge grid currents.
4. Measurements of power pentode  
plate currents.
5. Measurements of power pentode  
plate potentials.
6. Measurements of power pentode  
control grid potentials.
7. Measurements of power pentode  
filament potentials.
8. Screen grid analyses without radio  
circuit oscillation.
9. Six (6) ranges for A.C. potential  
measurements up to 900 volts with  
"1,000-ohms-per-volt" meter sensi-  
tivity.

**MODEL 90 DOES**



Dealers Net Price,  
F.O.B. Greenwood, **\$78.50**  
Miss.

**25**

INSTRUMENTS  
IN  
**1**



● Horns on deck of truck in position for travel. This facilitates transportation but does not affect their use while truck is in motion.

## The Finest Sound Truck in the World Today Equipped with WRIGHT-DE COSTER REPRODUCERS

"OUR BUSINESS IS SOUND"

**EATON RADIO, INC.**  
Greeley, Colorado.

Wright-DeCoster, Inc.,  
St. Paul, Minn.

May 18, 1931.

Gentlemen:

We are using Wright-DeCoster speakers exclusively in all our sound work, and we have found them eminently satisfactory, both from the standpoint of service as well as quality. We use the truck in operation while it is under-way as well as stationary, and we are able to do this somewhat differently than was done heretofore, in that we have taken a Kohler 2000 watt DC electric plant, and by reconverting it, are obtaining approximately 2000 watt, 110 volt, 60 cycle output to operate our amplifiers and speakers. It is needless to say that, with this amount of power available, we are able to have tremendous volume to overcome any amount of street noise, and the fact that the Wright-DeCoster speakers handle this volume with unsurpassed quality, makes our arrangement most outstanding.

Everywhere we have presented it, it has been received very enthusiastically.

We attribute a great part of our success heretofore in our sound work to our selection of Wright-DeCoster speakers, and we wish to thank you for making it possible to obtain such an exceptionally outstanding product.

Yours very truly,

EATON RADIO, INC.  
Fred A. Nichols, Mgr.

Used with tremendous power . . . volume to overcome any amount of outside noise . . . yet unsurpassed tone quality . . . outstanding performance. . . .

Selling sound offers one of the greatest opportunities of the day. Write for complete information and address of nearest sales office.

**WRIGHT-DE COSTER, INC.**

2218 University Avenue

St. Paul, Minn.

Export Dept.: M. SIMONS & SON CO., 25 Warren St., New York City

Cable Address: SIMONTRICE, New York



THE SPEAKER  
OF THE YEAR

● Eaton Sound Truck "stripped for action." Note the No. 9 Horns on the deck for covering a large area and the No. 5 Horns raised to assist in getting extreme distance. The whole arrangement is semi-portable so as to permit mounting it elsewhere, easily and quickly, as in Auditoriums or to divide the equipment so as to use part of it, if necessary, in different parts of the Auditorium or outdoor gatherings.

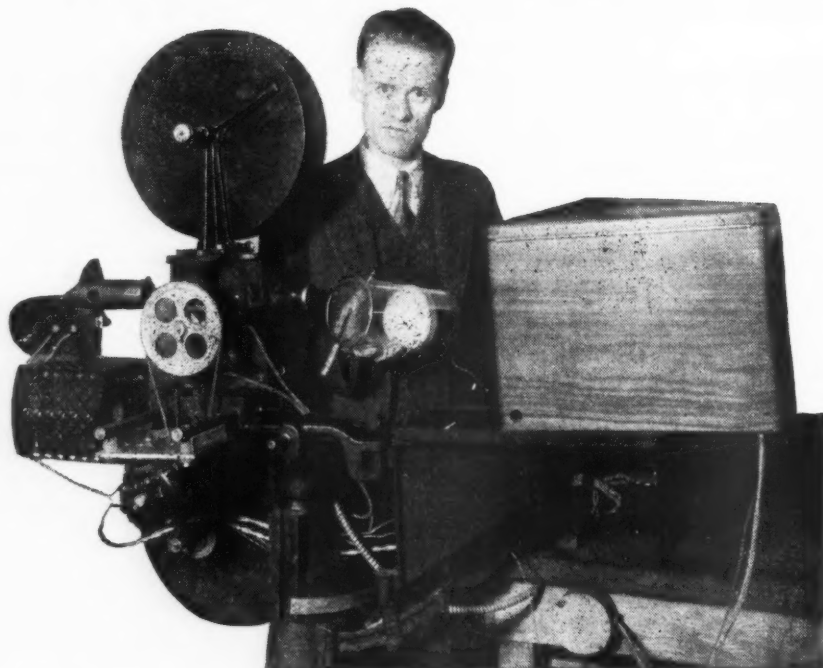
Tell them you saw it in RADIO

# TELEVISION

## Book Distributors WANTED!

**T**HE heretofore undisclosed principles of television by cathode ray are described fully and in detail in a new book, "PRINCIPLES OF TELEVISION," ready for the market within sixty days. In this altogether exclusive and highly important book you will find the information which you have been looking for but have never been able to secure. Distributors are wanted immediately to share in the sales of this book. We invite you to become a franchised television book distributor. Please communicate with us now.

### *Cathode Ray Television Fully Described*



The illustration shows one of the new cathode ray television systems by means of which talking motion pictures will be brought into the home by radio. This system is out of the laboratory and is no longer in the experimental stage. It shows a 400-line picture, one foot square. It is inexpensive. The illustration shows the transmitting tube and the standard motion picture film projector which the broadcast stations will use.

The new book, "PRINCIPLES OF TELEVISION," is the recognized authority on all television in all its branches. The book has three sections. Section 1 is for the layman... written in plain, understandable language. Section 2 is for the experimenter. Section 3 is for the engineer. All three sections are bound into one complete volume, 6x9 inches, in cloth. This book is really a complete course of instruction in television. Right up to date... telling you the many things you have long wanted to know.

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Now. Order Your Copy Today

PUBLISHERS OF

# RADIO

415 Lexington Avenue  
New York City, N. Y.

Pacific Building  
San Francisco, California

WRITE TO NEAREST OFFICE

# RADIOTORIAL COMMENT

## ◀◀ The Chicago Show ▶▶▶

**T**HE outstanding event of the radio trade year, the annual R.M.A. show at Chicago, passes into history as the most successful business show that the radio industry has yet staged. Over twenty thousand manufacturers, jobbers and dealers from all over the country came with the serious purpose of getting first-hand information as to what they will have to sell during the coming season. In this year of lessened income, there was less entertainment, less hurrah and more getting down to brass tacks than at any previous show.

**T**HE dealers learned that they will receive good standard merchandize to be sold at comparatively low prices. Most of the sets are superheterodynes with electrodynamic speakers. It is anticipated nearly two-thirds of the cabinets to house this equipment will be of midget size. Many beautiful console models for both the low-price and high-class trade were shown, but the tendency of the big producers is still strongly toward the mantel and low-priced console types. Most of them use the pentode tubes as a means of getting the maximum undistorted output for the minimum expenditure of cash.

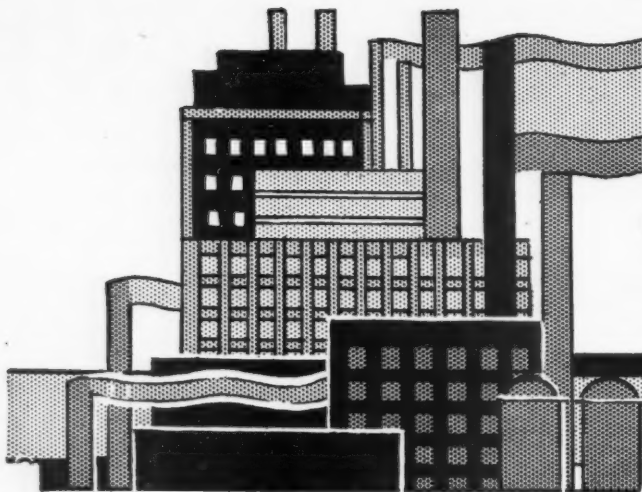
**N**OVELTIES were conspicuous by their scarcity. A half-dozen exhibitors showed "grandfather clocks" which combined a radio set and electric clock in one cabinet for hallway installation. One exhibitor had a "talking chair" with concealed radio. One manufacturer featured a radio built in a piano. The pentode and variable-mu tubes were much in evidence but are no longer regarded as novelties. The short-wave adaptor promises to be one of the largest best sellers among radio accessories.

**T**HE aggregate of production schedules indicate that about 2½ million radio sets will be built and sold during the next year. Most manufacturers are conservatively avoiding any possibility of over-production and consequent dumping at cut prices in mid season. One manufacturer, however, plans to make one million sets and on the basis of his past sales record is not likely to carry over any unsold sets.

**D**EALERS and jobbers seemed to be almost unanimous in the opinion that until television is commercialized their salvation lies in the sale of non-radio side-lines like electric refrigerators, washing machines and small household appliances. Some excellent home movie and talkie outfits are available but the high cost of suitable film seems likely to retard sales.

**T**HE show gave no evidence of commercial television sets for general entertainment in the home. Four or five manufacturers exhibited attractive sets and kits with disc scanners, but these will have the strongest appeal to experimenters. No sets with cathode ray scanning were on exhibition, though rumors were rife that they will be available for fall sales in communities where programs are on the air. So far as any concrete evidence presented at the show was concerned, however, any come-back in radio sales as a result of television is still a postponed hope.

**N**EVERTHELESS, with the return of buying power based upon confidence there is no doubt but what those who survive the long siege of business depression will be in a position to profit handsomely from the sale of the better and cheaper sets exhibited at the show.



# The Trend of

## Still Lower Priced Midgets and Low Priced Consoles

A YEAR ago midget sets were sold within a very narrow price range. This fall season will see a number of smaller sets offered at from \$24.50 to \$39.50. Commenting on the lower priced mantel set A. U. Mangan, president of Echophone, says that the office man is a good prospect for the purchase of a very low priced mantel set and that it will also fill a needed purpose for a third set in the home. Vacationists are looked upon as prospects. The new Echophone mantel set at \$32.75, with tubes, will be ready for the market next month. It uses four tubes . . . one '27, one '35, one '47 and one '80. Commenting further on business conditions, Mr. Mangan states that there will also be a brisk demand for a low priced console with eye appeal and tone quality. His company has such a receiver under way. It will list for \$89.50, with eight tubes in a superheterodyne circuit. Two other Echophones of the mantel type, both superheterodynes, one with six tubes at \$53.75 complete and another with eight tubes at \$69.50 complete, round out the Echophone line.

The financial report of Echophone is unusually encouraging. Over 200,000 sets have been built to date. Fifty-nine distributors sell Echophones to Eastern and Mid-Western dealers. Business is 50 per cent ahead of last year. A new D.C. mantel set will soon be announced—seven tubes, \$59.50 list, complete. Frank Jones is doing the engineering for Echophone. Previously he designed radio equipment for Remler, Magnavox, Jensen, Gilfillan, Baldwin and others.

□ ● □

## Grigsby-Grunow May Sales in Large Gain

NET sales of the Grigsby-Grunow Company for the month of May amounted to \$2,609,086 as compared with sales of \$558,779 for May, 1930. The increase at this time is principally

due to the new business on Majestic electric refrigerators, according to Don M. Compton, vice-president and general manager.

The company will close its plants for a ten-day factory vacation period, beginning June 26 and resume operations on July 6.

Mr. Compton also said that sales for the current month in refrigerators are proceeding at approximately the rate for May, and the company is currently operating in radio on battery sets and automobile radio sets and expects to begin production of its new "sub-midget" for the new fall season line immediately on the resumption of work in the factory July 6.

□ ● □

## Dynamic Speaker Business Cornered

LAST year the tube manufacturers had the edge. This year the speaker manufacturers fare best. Merely because speaker business is divided among the big fellows. Magnavox, Jensen, Utah, Rola and Wright-DeCoster are the kingpins. Satisfactory improvement is reported by all. Magnavox has the Mer-shon Condenser business to help boost profits. Jensen has the new permanent magnet speaker to help things along. Utah has the remote control unit. Wright-DeCoster has a large and varied line of horns and other amplifying equipment and Rola has some profitable and exclusive contracts. Overhead and selling and manufacturing costs have been cut to the core by these five speaker manufacturers. Unit profits are ridiculously small. Volume sales alone keep the figures on the right side of the ledger. Strange but true, a rebate on returned cartons is made by one speaker manufacturer. And these cartons are used over and again to ship speakers to other customers.

## R. C. A. Licenses Renewed

INTERNATIONAL NEWS SERVICE says that licenses of subsidiaries of the Radio Corporation of America, jeopardized by a recent decision of the U. S. Supreme Court, holding that company in violation of the Clayton Act, will be renewed on their expiration, the Federal Radio Commission ruled on June 24.

The commission held that violation of the anti-trust laws by the parent company did not force the forfeiture of broadcasting, communications and experimental licenses by the subsidiary companies under Section 13 of the Federal Radio Act.

Unless interveners in the case have the Federal courts review the commission's action, the matter is closed, and the various RCA subsidiaries may continue operation without interference.

□ ● □

## Audiola Reduces Price

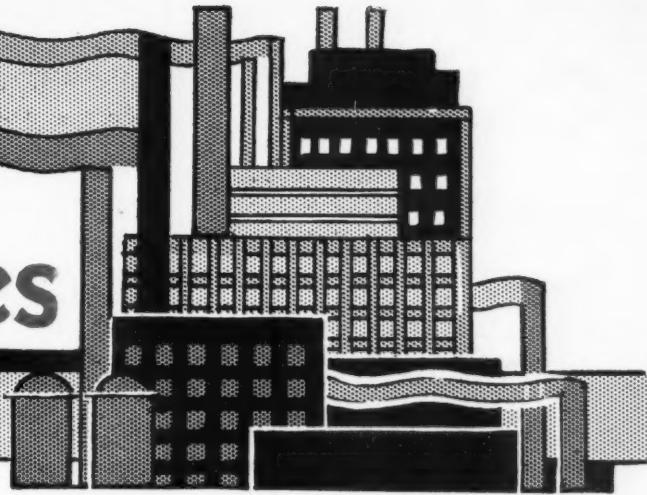
FURTHER reductions in the already reduced list prices of Audiola models exhibited at the show were announced by the manufacturer. A new 4-tube sub-midget receiver has been added to the line. It has a pentode, a variable-mu, a screen grid and an '80. The list price is \$37.50, with the usual discounts to jobbers and dealers. The chassis can also be purchased separately, with or without tubes or speaker. The chassis with dynamic speaker lists for about \$27.00, without tubes. It has two tuned stages and can be used for local reception in such localities as Chicago, Indianapolis, New York, Pennsylvania, St. Louis, Kansas City, New England states and in most of the metropolitan centers along the Pacific Coast. The receiver does not have sufficient selectivity to perform satisfactorily in Davenport, Iowa, but ample selectivity is had for other localities.

The reduced prices of other Audiola models are:

No. 610, 6-tube pentode mantel model, now \$49.95, complete with tubes.

No. 810, 8-tube superheterodyne mantel, now \$65.00, with tubes.

# The Radio Times



No. 612, 6-tube pentode console, now \$65.00, complete with tubes.

No. 812, 8-tube superheterodyne console, now \$79.00, with tubes.

Audiola reports business on the upgrade with a very large increase over the first six months of last year.

□ ● □

## Manufacturers Sell Sets at No Profit

WE quote from the confidential bulletin of one leading radio manufacturer: "One of our low-priced models is sold to you at no profit and we are, therefore, not interested in orders for this set alone. We expect you to push our entire line. We have priced this one model to enable you to meet dominant competition."

□ ● □

## Grunow Will Have Four Sets

UNUSUAL interest is centered around the Grunow Corporation, with headquarters at 221 North La Salle Street, Chicago. Wm. C. Grunow, president, is more than pleased with the business outlook for his new company.

The new line of sets by Grunow will include models selling at \$69.50, \$97.50, \$132.50 and \$165.00. The latter is an elaborate radio-phonograph combination with automatic record changer. Some of the exclusive features to be found in the Grunow products are not disclosed at this time. An extensive jobber lineup has been completed and merchandising plans are now being whipped into shape. The company is also doing laboratory work on a new television tube which shows pictures in sharp black and white effects. Twenty-six of Mr. Grunow's former associates in executive capacities have joined him in his new venture.

□ ● □

## More About the Wextark Receivership

A MEMBER of the creditors' committee reports that inventories amount to \$1,300,000. Fixed assets at

\$600,000. Accounts receivable at \$2,300,000. Liabilities \$325,000, and a two million dollar bond issue outstanding. Wextark's rent bill amounts to about \$40,000 per month.

□ ● □

## Zenith Radio Loss \$482,740

ZENITH Radio Corporation reported for the year ending April 30 net loss of \$482,740 after all charges, including depreciation, interest and financial expenses, compared with net loss of \$258,014 in the preceding fiscal year. Current assets were \$1,743,321 as of April 30, against current liabilities of \$369,684. There was a deficit shown of \$155,768, contrasted with surplus as of April 30, 1930, of \$326,972.

□ ● □

## Business Conditions

THE decline in radio sales, particularly in the Mid-West, is regarded as reflecting the generally depressed conditions in that section of the nation. Radio conditions in the Eastern states and along the Pacific Coast are more favorable.

□ ● □

## Television

AT the R. M. A. Trade Show four television exhibits were shown. Insuline Corporation, Freed Radio & Television Corporation, Jenkins, Short Wave & Television Laboratories and A. U. Sanabria.

□ ● □

## Television Demonstration

VOLNEY HURD, Radio Editor of the *Christian Science Monitor*, explained the operation of the television system as used by U. A. Sanabria of Chicago and Short Wave & Television Corporation of Boston, at a series of private demonstration given in the 8th Street Theatre in the Stevens Hotel. The complete transmitter and receiver

was installed and operated on the stage of the theatre. Television pictures were thrown on a screen. The audience was given an unusually good idea of television by means of a scanning disc. The pictures were distinguishable and clear. So much so, in fact, that a tremendous round of applause was given by the audience at the conclusion of the demonstration. The picture was first shown on a screen about two feet square. It has a rather pronounced "neon pink" color tint and is somewhat difficult on the eyes. The inventors say that this difficulty is being remedied. Later, the picture was enlarged to about ten feet square with marked detail and definition. Magnifying lenses about 3 inches in diameter are set into the holes on the scanning disc which was used to show the picture. The inventors say that it can be transmitted on a 15 kilocycle band and that a 410 line picture will soon be brought into the home via the Sanabria-Short Wave & Television method. Favorable comment was voiced by those who attended the demonstrations in the theatre and radio merchants agreed that unusually rapid progress in television is being made.

□ ● □

## Magnavox Net Profit \$80,221 For First Quarter

WHAT is regarded in financial and radio circles as "extremely gratifying" is the first quarter 1931 report of Magnavox, Limited. Profits of \$80,221 are shown, or 6 cents a share on 1,313,076 outstanding shares. The business of the company has shown a marked improvement over the year 1930. Mershon Condenser sales have increased 469 per cent, while the dynamic speaker business has shown an increase of 140 per cent. Two foreign subsidiaries of the company are now in operation, one in Australia and the other in England. The stock has been selling at around \$2.00 per share. The high for 1930 was \$8.00, and the low was \$1.25.



# News of the Month

"UNFORTUNATELY, fear, distrust and lack of recognition of the duty owing others in the industry have so far rendered it impossible to give statistical service of any appreciable benefit to members," said Morris Metcalf, retiring president of the Radio Manufacturers Association.

**AN ESTIMATE** by the National Electric Light Association shows that at the close of 1930 90,806 additional farms received line electric service over the previous year. Other sources say there are 4,000,000 unwired homes which do not have radios, and 2,000,000 unwired homes which have obsolete battery sets.

**A WRITER**, recently claiming that developments of a scientific nature have always helped the country out depression periods, believes that the two most promising developments at this time are dry-ice and television.

"**THE DEVELOPMENT OF RADIO** along proved merchandising lines has been hampered in the past by many forms of unsound and uneconomic production and selling methods," says G. K. Throckmorton, president of the E. T. Cunningham, Inc.

**SPARTON** has bought the Visionola Corporation and announces the "Sparton Visionola," a home-talkie outfit which shows pictures 18x24 inches and uses 16 mm. film and 16-inch disc records which are synchronized with the films. Film and record come as a unit on a rental basis through a number of film libraries. Production will be under way within three weeks.

**GRAY AND DANIELSON MFG. CO.**, makers of Remler radio, announce a seven-tube mantel superheterodyne at \$49.50, list, complete with tubes. It has two variable-mus and a pentode amplifier. Dynamic speaker. Direct factory-to-dealer selling policy. Lowest price of any superheterodyne yet made by Remler. Production now under way.

**PULSATING COMPENSATOR** patent No. 1,669,958 granted to Philip John Walsh of San Francisco after bitter fight in patent office. Charles W. Green, Bell Telephone laboratory engineer, loses rights to similar device. In-

ventor Walsh claims elimination of distortion in amplifiers by means of his patent. Also makes possible operation of sets and amplifiers directly from alternating current lines without use of rectifiers or filters. Will also have effect upon current development of television equipment.

## Utah Shows Profit of \$73,194.79

**THE** consolidated balance sheet of the Utah Radio Products Company and subsidiaries owned or in process of 100 per cent acquisition as of December 31, 1930, shows total current assets at \$1,966,529.66 as against total current liabilities of \$156,435.07. Cash alone totaled \$426,409.16 or nearly two and a half times the liabilities, and time certificates of deposit and United States Liberty Loan bonds totaled \$236,806.25 in addition to the nearly half million dollar cash on hand.

A supplementary statement for the six months ended December 31, 1930 shows gross sales totaling \$2,097,619.78 and a gross profit of \$323,582.59. The net operating profit was \$73,194.79 and other income of \$22,774.00 brought the net income of the company for the six months to \$93,756.45.

The Utah Company also announced that it had sold several hundred thousand of its new six-inch small speakers thus far this season; more than 8,000 of the new Utah automobile radio remote control units and a large volume of a new and unique resistance material for volume control, and similar devices.

**BUREAU OF CENSUS** reports 484 retail radio dealers in New York state did \$1,668,232 gross business in the third quarter of last year, and in the fourth quarter \$3,108,176. The average shows one trade-in per dealer per week during the last quarter, or a total of 4,151.

**CLARENCE H. MACKAY**, president of the Mackay Radio and Telegraph Company, announces that the two Newark factories now controlled by his company have reopened.

These factories formerly were operated by the Kolster Radio group. The majority of the additional personnel, Mackay states, will be engaged in the manufacture of the new Kolster International radio receiver.

**GRIGSBY-GRUNOW COMPANY** May 1931 sales showed a total of \$2,609,986, \$542,254 of which was for radios and \$2,066,732 for refrigerators.

**COLUMBIA BROADCASTING COMPANY** declared an initial cash dividend of \$1.00 a share, and a stock dividend of 15 per cent.

**CABLE RADIO TUBE CORPORATION** report for year ended April 30 showed net loss of \$422,728 after depreciation, inventory adjustments and other charges.

Twenty-one manufacturers displayed miniature or mantel types of radio receivers at the 1931 Chicago Show, as against one at the 1930 Atlantic City Show.

**EDWARD E. SHUMAKER**, president R.C.A.-Victor Co., recently stated that his company has spent over \$1,000,000 on television experimental work.

**ACCORDING TO FIGURES** made available there were 85,000 stockholders of the Radio Corporation at the end of 1930, an increase of 42 per cent over the close of the year 1929.

**WESTON ELECTRICAL INSTRUMENT COMPANY** has taken over the Jewell Electrical Instrument Company for a consideration of \$500,000 and a block of Weston stock.

**POLYMET MANUFACTURING COMPANY** recently established a Canadian subsidiary, Polymet of Canada, Ltd., with headquarters at Hamilton, Ont. Condensers, resistors, coils and transformers as well as units for the electrical industry will be manufactured there.

**IT WAS ANNOUNCED** that the Orange Securities Corporation, which recently purchased the assets of Kolster Radio Corporation, is controlled by the Mackay Radio and Telegraph Company. Federal Telegraph Company of California goes along with the sale. Kolster Radio, Inc., has been formed to carry on the manufacture of broadcast receivers. Kolster Radio Corporation showed a final balance of \$242,590 to be distributed among 99,984 shares of outstanding preferred.

**SUMMARY FIGURES** made available recently by the Bureau of Advertising of the American Newspaper Publishers Association, under thirty-two classifications of newspaper advertising for the years 1929 and 1930, show the proportionate decrease greater under the headings of "radios and phonographs" (16 companies included) than any other classification on the list. Totals, 1929, \$14,405,000; 1930, \$7,185,000; decrease 50 per cent.

Second on the list of percentage decrease is "radio accessories" (four companies included). Totals, 1929, \$1,305,000, and, 1930, \$755,000, a decrease of 42 per cent.

Grouping the other thirty classifications on the list a decrease of only 12 per cent is indicated. Many classifications ran higher in their 1930 expenditures than their 1929 figures, although admittedly showing poor sales.

**THE FOLLOWING ADVERTISE-  
MENT** recently appeared in a large metropolitan newspaper:

MEN.  
Full Time. Part Time.  
Experience not necessary.

TELEVISION—

the future billion-dollar industry that will revolutionize the world's industries.

We want any man, regardless of his age, religion or past occupation, providing he is honest and ambitious.

Come and see this marvel of the ages.

TELEVISION.

You can earn big money by immediately joining our investment organization on a commission and bonus arrangement while this industry is still in its infancy.

**BUREAU OF LABOR STATIS-  
TICS** announced reports from forty-seven radio manufacturers put March 1931 employment at 18,687, and April 1931 employment in the same plants 20,491. Later figures not yet available.

**THE FIRE COMMISSIONER** of New York City is much concerned in the obstacle presented in radio aerials on roofs of tenements in that city. His chief concern is hazard of movement in case of fire, but another point is that claims have been made that line voltage finds its way into many aerials through faulty installation and faulty manufacture of sets.

**A BROADCASTER**, in trouble with the Federal Radio Commission, threatened to construct a station "just over the border" in Mexico with the intention of telling listeners-in on this side what he has to offer.

**COMMENTING ON THE DE-  
CISION** of the Federal Radio Com-  
mission when it refused to cancel RCA  
licenses because the corporation had  
been "finally adjudged guilty of unlaw-  
fully monopolizing radio communica-

tions through the control of radio appa-  
ratus," Oswald Francis Schuette of the  
Radio Protective Association said: "We  
will not appeal this case. The decision is  
an insult to the intelligence of Con-  
gress."

Chief Attorney Titus of RCA de-  
clared an unspeakable disaster would  
follow the commission's refusal to renew  
the licenses of RCA. Representative  
Reid (Illinois), addressing M. H.  
Aylesworth of National Broadcasting  
Co. at the hearing, said: "You're a  
slicker, too." And this from Aylesworth:  
"Well, it's something to be called a  
slicker by a congressman."

**NATIONAL BROADCASTING  
COMPANY** earned its first profit in  
1930. Gross business was twenty million  
dollars. Unfilled broadcasting contracts  
now on hand amount to more than seven-  
teen million dollars.

**NATIONAL UNION RADIO  
CORPORATION** reports a loss of  
\$25,573 for the year ending April 30.

**VICE-PRESIDENT GEO. LEWIS**  
of Arcturus Radio Tube Co. says deal-  
ers can make as much profit from the  
sale of tubes as from the sale of radio  
sets. This is one of the reasons why the  
number of exclusive radio tube stores is  
increasing.

**THE RADIO STATION PRO-  
GRAM MAGAZINE "BROADCAST  
WEEKLY"** has just completed an ex-  
tensive survey of listener-acceptance to  
broadcast programs. The findings re-  
veal a decided preference for undenom-  
national church services as conducted on

the N.B.C. chain by Seth Parker. This  
program won the popularity vote of 74  
per cent of those who participated in the  
contest.

The Empire Builder, also a national  
chain feature, took second place with a  
5 per cent smaller acceptance margin.

Amos and Andy fell into third place  
—3 per cent less popular than The Em-  
pire Builder and 7 per cent less popular  
than Seth Parker.

The final tabulations will appear in  
RADIO for August, as part of a mer-  
chandising service for dealers to help  
sell more radio sets by selling the more  
popular program features.

It is of interest to note that the Seth  
Parker broadcast has no advertising  
sponsor. The Bible is still a best seller.

**MAGNAVOX** is reported to have re-  
ceived another cash settlement of \$100,-  
000 in payment for dynamic speaker  
royalties from a receiving set manufac-  
turer whose name is not divulged. A  
similar amount was recently received  
from Grigsby-Grunow. Other manufac-  
turers who have infringed the Magna-  
vox patents are also being offered a com-  
promise settlement.

### Give Obsolete Sets to the Blind

How to accomplish the most good with an  
obsolete receiver was suggested to radio  
listeners of the nation on Tuesday, June 23,  
when a plea from the New York Association  
for the Blind for discarded trade-in radios  
was broadcast during the weekly concert of  
the Philco Symphony Orchestra.

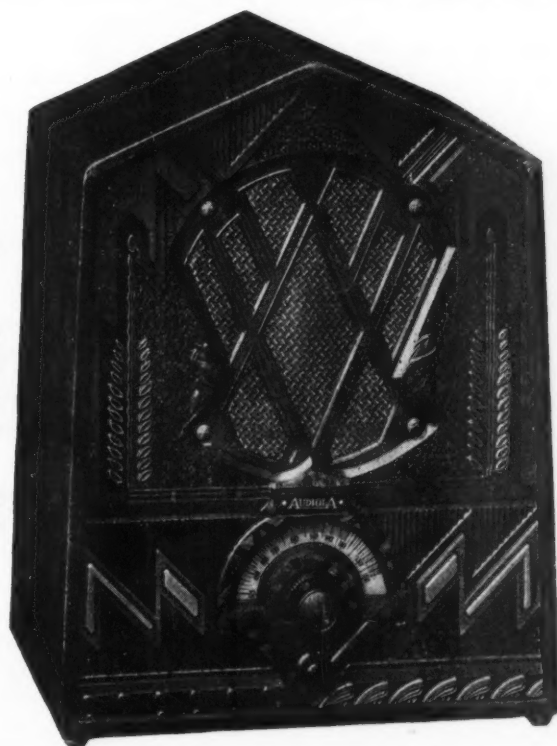
The appeal for old sets, made on behalf  
of institutions for the blind throughout the  
country, was made at the suggestion of the  
New York Association, which requested time  
during the regular Philco broadcast for its  
plea. Philco gladly endorsed the movement.

★ ★  
One of the  
Lower Priced Mantel  
Sets

The New Audiola  
Four-tube model with  
pentode and variable-  
mu. \$37.50 list, com-  
plete with tubes.

Chassis can be bought  
separately, with or  
without dynamic  
speaker.

★ ★



RADIO FOR JULY, 1931

13

# Does This Country Need A Good 5c Radio Set?

One thing that was NEW at the Radio Trade Show. It met with condemnation by those who thought it would compete with standard money-making merchandise. But it may be a money-maker itself, and if properly handled it WILL NOT weaken the position of the higher priced sets.

THE "good five cent radio set" is coming. And with it will come the demand for the third radio set in the home, or the fourth, or a set for the chickens to listen to so they can lay more eggs.

Now it is the sub-midget. Four tubers; the things are small enough to be carried home in a paper bag. Every time you sell a dozen or so of them in a lump you will make enough profit to pay the gas bill.

The sub-midget referred to will sell to the dealer for \$10.50 net, up, complete with tubes. It ('twill be *they* before this one gets very far) works pretty well, too; at least in a semi-decent locality. No selectivity, of course, nor sensitivity, but those are trivial details. The question that interests the dealer is: Will it find a market?

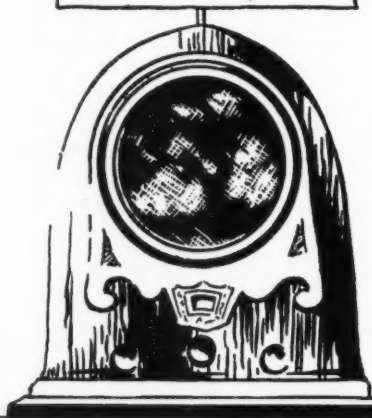
Let us make a study of the future of this little receiver. Perhaps if we could call in a clairvoyant or a crystal gazer we might learn something. Some dealers will come right out and refuse to sell them. Idealistic dealers who feel that the cheap set is ruining the radio industry. Other dealers will push them for all they are worth. So will drug stores, hardware dealers, book agents.

We have written a lot about selling the second set for the home. We have talked about putting it in the boy's room, the daughter's boudoir, the kitchen and the maid's room. Good ideas, all of them, but they are hard for the owner of the home to appreciate, probably because he spends his evenings in the parlor and is unable to understand why the others of the family can't go down to the parlor to hear their radio music. He doesn't get the youngster's viewpoint. The boy doesn't like the kind of music his father wants to hear; we've talked about that until every radio dealer believes it—or should we say, realizes it? But no matter how much the radio dealer understands the need for a second and third radio set or how anxious the boy or girl is for one, the father who

ELECTRIC  
PERCOLATOR  
\$20.00



RADIO  
SET  
\$12.75



appreciates the idea of having a supplementary receiver is the exception instead of the rule.

Having failed to sell the head of the household on the idea, the dealer should turn his efforts in the direction of the more logical buyer: the actual user of the second set. Say it is the boy of the house. He should be easy to sell on the idea of a set for his own room; a receiver that he can take on trips, to his parties, to the club, to his girl's. But, at the present prices of radio sets he, being sold, must turn around and sell the family treasurer,—a tough job. But put out a radio set at the price the boy can pay out of his own pocket and the pater will have nothing to say about it. When the boy is sold the set is sold.

A set selling for around \$16.50 will open up this market; open it up wide and develop real volume. The set will not have to deliver any more than sixteen dollars and fifteen cents' worth. Unless the boy is an experimenter (and if he is he will build his own set) he is interested in only what he hears; not how he hears it. Give him eight dollars worth of volume, six dollars worth of quality, a dollar and a half's worth of selectivity and a dollar's worth of sensitivity and he will be tickled pink.

The ways and means of crashing the gate of this market are somewhat different than those of selling to the business man or his wife. The medium that comes to mind is the school paper, in which an ad would have almost 100 per cent coverage. The school boy and girl are more appreciative of the business man's support of their school periodical than are the readers of other papers and magazines. A list of the students of the various high schools for direct mail purposes could easily be obtained, with a little ingenuity. Theater advertising, in smaller cities and towns, would be effective. But perhaps the most effective means of all in selling the youth of the country would be in hiring student salesmen on a commission basis.

In the earlier days of radio the boys of from twelve to twenty did a lot to support the industry; it might easily be expected that they will do so again if radio offers them something at the price they can afford to pay. It requires a different kind of merchandising, and the dealer who makes a study of this field will undoubtedly find a lively market for a piece of merchandise that might otherwise cause his downfall.

It seems to be the general opinion that the ultra low-priced radio set—the sub-midget selling for \$10.50 net or thereabouts to the dealer—will not cause as much damage to the industry as has the midget that upset the apple cart by selling for from \$39.50 to \$77.50. The reason for this is merely that human beings are too rational to accept any theory that the former will equal the larger console receivers in performance.

When they pay \$16.50 for a radio set they will do so either because that sum represents the maximum they can spend for radio entertainment, or because it's bought to be a supplementary receiver.

The sub-midget idea is nothing to get excited about. But as long as they're here the only way to keep them from stirring up unsurmountable competition is by handling them along with your other

lines, and pushing them intelligently. Go after the market that can't afford the higher priced receiver. Let it be a sideline to the regular midget and the console job business, just as if it were a waffle iron or a vacuum cleaner. Don't make claims for it that it can't justify; if you do you will not only hurt your reputation but you will be giving it a free pass into the field held sacred by your more expensive and profitable sets.

## The Radio Dealer Gives the Manufacturer a Franchise

**FRANCHISE, to** ..... **Manufacturing Company.**

*I, the local radio dealer in this territory, have carefully looked into the merchandising policies, periodic model issues, dealer protection policy, and financial stability of the aforesaid line of merchandise, and put my O. K. on it as the best possible line to bring dollars into my pocket and satisfaction to my customers.*

*(Signed) JOHN DOE,*

*Radio Dealer.*

**T**HE constant decline year after year in the list price of radio receivers; the continual lowering price on tubes, and the attitude on the part of the manufacturer that the "end justifies the

means" in the dumping of his merchandise, brings a new factor into radio merchandising.

This season more than ever before radio dealers approached as outlets for

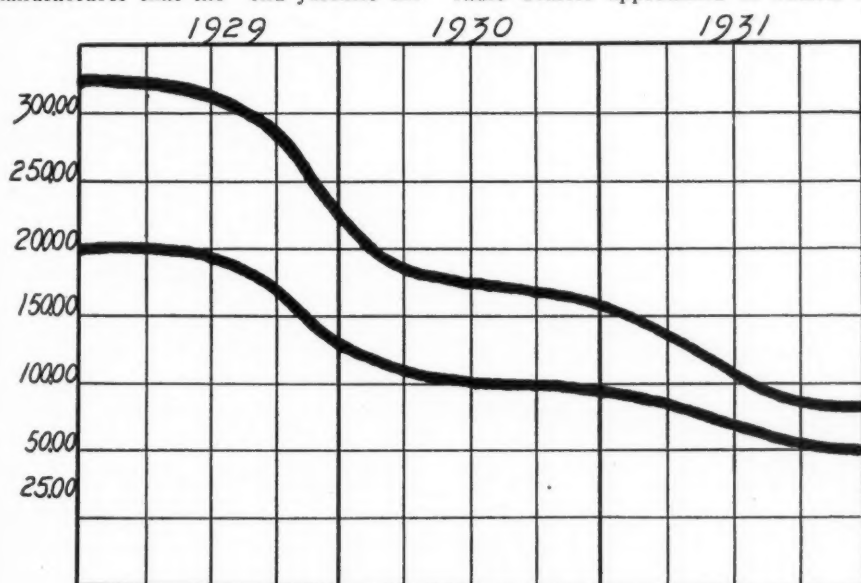
manufacturers' products through local jobbers are making their own franchises of what lines they are going to handle.

**The dealer considers all products in the following order:**

1. Has the manufacturer given longer discounts to chain radio stores, allowing the independent dealer to be undersold?
2. Has the manufacturer made end-of-season "dumps" of left-overs to department stores, mail order houses, and other outlets without proper dealer protection?
3. Has the manufacturer allowed invasion of territorial rights by dealers too close together?
4. Has the manufacturer issued "between season" models, making the stock in the dealers' stores obsolete?
5. Has the manufacturer put into his merchandise the best material and workmanship that the list price allows?

### Dealer Views Tube Situation

The radio tube situation has been as bad for the dealer as the set problem. Gradually, but surely, the trend in list (Continued on next page)



Above: Average list price. Below: Dealer's average cost.  
Space between indicates profit.

RADIO FOR JULY, 1931

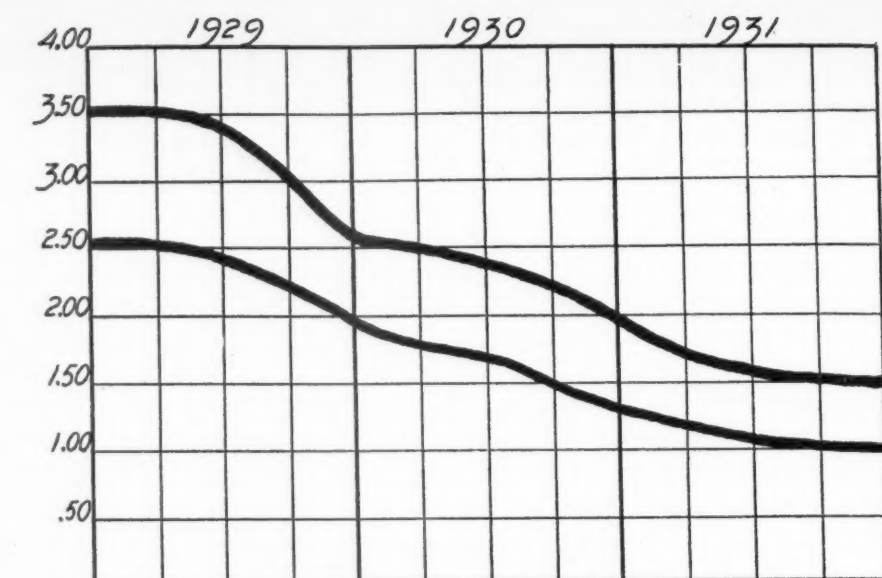
## The Radio Dealer Gives The Manufacturer a Franchise

(Continued from page 15)

price has been down, and the number of models of tubes has increased. This provides more work and cost in handling the different styles, and therefore less profit in the turn-over.

The radio dealer in this market is also considering his lines with the same careful judgment. What manufacturer is protecting him on stock when the list price is cut? What manufacturer is giving him an exclusive territorial privilege? What manufacturer is allowing price cuts that affect his sales? What tubes will stay sold, or if returned will be credited for faulty manufacture?

Every radio dealer in the country knows that the cut in the price of radio tubes has not proportionately increased his sales. What is causing this terrific slaughter of prices? A dealer may be in a town of five thousand, or he may be in a city of a million. One thing is sure, he knows that his business profits are being hurt, and he knows that whatever and whoever is responsible is not "playing the game" for his interests. Manufacturers have been inclined to believe that radio dealers are merely outlets for the sale of radio merchandise. But, by the same token, many manufacturers this coming season will find that they



Above: Average list of tubes for three years. Below: Dealer's cost. Space between indicates profit.

are very selective as to what lines they will carry, and are reserving the reasons for themselves.

The local radio dealer is not unmindful of the fact that when his neighbor, also in the radio business, is forced out, the remaining dealer becomes doubly valuable to the manufacturer of the lines he is handling.

In the mad scramble among manufacturers to destroy their competitors;

to gobble up the market by going them "one better" in the lowering of list prices; to stay at the top of the pile, considering only what the other manufacturer will do, and his possible facilities to meet or beat price reductions with lower priced models, Mr. Radio Dealer is stepping up to assert his rights for consideration; or, at least, to voice his own opinion on what seems to be working toward his own destruction.

# Your Service Department Should Pay

By HENRY STRUCKMAN

**H**OW many radio dealers have ever taken the time to find out exactly just what Service means?

Any number of dealers will immediately tell you it is nothing but an expense and blame their service departments for absorbing practically all of their profits.

A dealer will spend enormous amounts every year for newspaper and other types of advertising and consider the money spent in this manner well invested, but when a service man suggests that a new tube tester or test equipment be added to the service department in order that better and more prompt service may be given, the suggestion is met with immediate disapproval on the part of the store owner. While newspaper and other forms of advertising are needed by the dealer, it is a proven fact that more radio receiving set sales can be directly traced to set owners who have been given satisfactory service and recommend that particular set, than through any other source.

I believe the dealer should look upon his service department not as a necessary evil and liability, but as a good-will de-

partment, for after all, good-will is the biggest asset of any business and can be won by real service.

In order that a dealer may give real service he must have a properly equipped service department with a qualified man in charge. Two or three years ago, a man equipped with a screwdriver and a pair of pliers could call himself a radio service man and almost get away with it.

Needless to say, this so-called screwdriver and plier type of radio service man is now out the picture and so are the dealers who employed them.

Today it is absolutely necessary that a radio service man have a technical knowledge of radio, for without this, his chance in the service field will never come. When I state your radio service man must have a technical education, please do not misconstrue my meaning and get the impression that this is the only qualification, for while it is absolutely necessary for the man to have some basic foundation regarding the technical side of radio, it is also of the utmost importance that he has good common sense and the ability to think for himself. Otherwise, his technical

knowledge will not be of much value to him.

I mention this because I have had the sad experience of employing first-grade technical men who unfortunately did not possess the faculty to think for themselves and therefore were useless to us.

I have had the dealer tell me he could not understand why Mrs. So and So was not satisfied with his service, inasmuch as he had sent three men to her home within one week. This dealer was making a big mistake, although in his mind he thought he was giving good service. He failed to stop and realize what his customer wanted was her set to be made to function properly the first time and not to be inconvenienced by having service men call every day.

Bear in mind that the dealer must maintain a service department if he hopes to remain in the radio business. Therefore, if he faces the facts squarely, employs the right type of man and equips him with the proper equipment, he can at least break even, and although he might not realize a profit on his service department, he will certainly gain lots of good-will.

# Contests Aid Summer Sales

◆ ◆ By Henry Sucher ◆ ◆

SUMMER months, of course, are always accompanied by a slowing up of business except, perhaps, at the beaches. This is especially true of the present, when there is so much unemployment, and buying power is curtailed all over the world.

This is not an excuse, though, for sitting back and letting things drift. The live-wire dealer will keep on his toes and go after customers now more than ever. In this respect, it is interesting to note what other stores are doing to stimulate sales.

One dealer down in Ashville, N. C., has enjoyed unusual success with an annual fishing contest which each year attracts thousands of persons in that and surrounding cities. First a series of newspaper ads (these need not be large) are run calling attention to everyone in that state to the fact that this store is offering a collection of worth-while prizes to the persons who had the largest trout, bass and muskellonge. These prizes generally consist of small radio sets or very attractive prices on the more expensive outfits.

Persons entering the contest are first required to register at the store. Registration starts about April 15 and runs to September 30. During these five and one-half months the newspapers give plenty of space to the progress of the various contestants and in this manner considerable enthusiasm is worked up not only among those participating, but also among their relatives and friends.

The store is also enabled, through this event, to obtain names and addresses which make a splendid mailing list, because practically everyone on this list is more than likely to feel friendly towards this establishment.

In launching a recent contest, this store announced, "Catch the largest trout, bass or muskellonge in the waters of Western North Carolina and win a worth-while prize. And since it isn't always the seasoned fisherman who lands the big ones, it behooves every amateur to register in this contest before going fishing. One registration is sufficient for the entire season."

The conditions announced were as follows:

1. All fish submitted for prizes MUST be caught with rod and reel and artificial bait. All live bait catches will be barred from contest. This includes tip-ping flies.

2. All fish entered for prizes MUST be brought or delivered to this store to be weighed and properly registered.

(Out-of-town entries will be returned, packed in ice, if desired.)

3. Every contestant MUST have first registered his name at our store, otherwise he or she will not be eligible. Out-of-town fishermen desiring to enter this contest, may register by mail. Simply send us your name and address on a postcard.

## New Employees Introduced in Ads

Another store in the same city has made it a practice to introduce its personnel to the public through newspaper ads. Whenever any change is made in the staff, the public is informed. There is no unnecessary bombast connected with the announcement; just a simple, straightforward statement to the effect that a certain person has joined the organization.

In addition to attracting the attention of the new employee's friends and relatives, this type of advertising is always in favor. There is something human about it, and this establishment has found that considerable good-will and prestige has been gained in this manner.

## Novel Guessing Contest Attracts Attention

One store in New Orleans, La., attracted unusual attention and traced good results directly from a novel guessing contest. In one of the store's windows, a man built a radio set in full sight of his audience.

An announcement in the window informed the public that prizes would be awarded the persons who came closest to guessing exactly how many pieces would be used in making the complete set.

All those wishing to enter the contest were required to enter the store where they were given cards to fill out with their guesses, their names, addresses and phone numbers. Increased sales during the contest and a valuable mailing list were the store's reward.

## Another Contest That Spurred Business

While we are on the subject of contests, it might be well to mention an inexpensive event which boosted business for one medium-sized radio shop. At the beginning of the new year, this store put out a very attractive calendar, the picture bearing the title, "Happy Hunting Ground." Two prizes of five dollars each were offered for the best compositions on this picture.

As soon as this contest was made known, numerous requests for calendars were received. Naturally, these calendars

went into the homes and served as a constant advertisement of this store.

Another clever stroke by the owner of this store was the printing of the two prize-winning compositions in a half-page display advertisement in the newspaper, and also the names and addresses of the long list of contestants. Three men well known throughout the county were chosen to act as judges.

From this contest this store not only realized new business, but won much good-will for itself. Each contestant was asked to state at the end of the competition his or her reason for believing it would be advantageous to trade at this radio store. These reasons served as excellent material for advertisements, not only in newspapers and direct mail but also in the window displays.

## Dictionary of Radio Names and Addresses

In order to make it easier for radio owners to understand screen grid, transformer and numerous other words and phrases peculiar to both broadcasting and receiving sets, one store had a small dictionary compiled and distributed free.

Interspersed throughout the dictionary, of course, were advertisements of the store together with announcements from several of the radio manufacturers and makers of accessories. In this way, some of the expense of printing this booklet were borne by others.

Persons receiving copies of this dictionary were invited to write, phone or call in person for any further information they might desire.

## Cooperative Store Window Displays

A number of radio dealers in various parts of one city got together and made arrangements for working cooperatively in arranging window displays. That is, the services of an expert display man were secured and plans made for purchasing any materials that might be needed for displays, on a cooperative basis. It was also arranged so that this material could be switched from one store to another for use in their windows.

In this way, highly attractive displays were presented which could not have been done by individual stores because of the expense which would have been incurred. Many novel layouts attracted favorable comments from newspapers and other sources.

No retailer can afford to overlook the fact that most of the trade in the radio field usually goes to the wide-awake merchant who is constantly on the lookout for new ideas and who uses them to attract and stimulate business.

# TELEVISION

## at The Trade Show

### Reflects Progress

**T**ELEVISION was the much discussed topic of the trade show as was to be expected with the revived public interest which has marked this new art's activities during three months. The prominent displays were the Jenkins-DeForest and Short Wave and Television Corporation lines since both these concerns are concentrating on television. In addition the Insuline Corporation exhibited an experimenter's television. All this equipment has been built on the 60 line scanning standard now in general use in the East. Freed Radio and Television Corporation is also in the field.

□ □ □ □

**W**HILE the showing of televisions was confined to the types where one peers into an opening and sees the picture amplified optically through large lenses, the general impression was that projected pictures up to two feet in size will be available soon. Once get television out of the non-projected in the projected stage and it will rapidly start to pass from the experimental into the general home use stage.

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**T**HAT projection is already an accomplished fact was apparent to all those who attended the ten foot television picture dinner at the Drake Hotel during the trade show week. These pictures are not only ten foot square but are also available in black and white as well as the usual neon pink. It is quite apparent that if satisfactory detail and brilliance of image can be achieved to throw up a ten foot picture, then two foot pictures in the home should soon be forthcoming. This ten foot display is the joint activity of U. A. Sanabria and George Gruskin combining forces with the Shortwave and Television Corporation of Boston.

In view of this successful large picture work the fall shows for the public should be marked by displays of home television projectors operating on sixty lines bringing into the homes the entertainment which will then be on the air from many different television transmitting stations.



Arthur Stringer

Arthur Stringer, who knows more radio editors than any other public relations man in America, did a great job for the Radio Manufacturers Association at the convention and trade show which closed in Chicago on June 12.

His success undoubtedly results from his working principle that he never authorizes the release of a story unless he would O. K. its publication if he were on the desk of the publication to which it was sent.

This practice has built up such a national reputation that the truth and accuracy of his releases, no matter if out of the ordinary, are never questioned by the editors.

Early experience in editorial work on metropolitan newspapers, followed by six years in the advertising department of The Chicago Tribune, prepared him for the establishment of his independent service.

For the past four years he has handled the two national radio shows, the Radio-Electrical World's Fair, Madison Square Garden, in New York City, and the Chicago Radio-Electrical Show, in addition to the R. M. A. trade shows.

A tribute to his standing in the newspaper world is the fact that he is the executive vice-president of the Newspaper Radio Editors Association. His interests transcend his professional work, however, and Mr. Stringer is one of the leaders in municipal work in the Gold Coast suburbs which stretch out along Lake Michigan north of Chicago.

Five years ago, after securing the passage of enabling legislation at the state capital, he organized the North Shore Mosquito Abatement District, and has since served as its president.

He was married in 1919, the day Mrs. Stringer received her degree at the University of Chicago, from which Mr. Stringer had graduated two years previously. They have two children, a boy and a girl.

*Excerpts from address of J. Clarke Coit, president of the United States Radio & Television Corporation, in accepting the presidency of the Radio Manufacturers Association, Stevens Hotel, Wednesday, June 10, 1931.*

**Y**OU men realize that in 1928 thirty per cent of all the goods manufactured were not heard of thirty years ago. The automobile, electric refrigeration, the airplane, the radio, have come into existence during that time. For thirty years I worked with thirty some odd thousand retail hardware dealers in the United States. The last six years I tried to get them to realize that the goods they had in stock, to a great degree, were out of existence. I found many a hardware dealer trying to sell the whippie-tree. Many of you young men don't know what a whippie-tree is unless at college you sung the song of the "Old Gray Mare and the Whippie-Tree." Not only the retail hardware dealer, the retailers of other commodities, but the distributors as well are trying to sell goods today that are practically out of existence.

**W**HEN I was married, thirty-four years ago, I bought a steel range, five or six barrels of enamel ware and tinware and started housekeeping. What has the bride of today? She buys an electric percolator. The steel range is practically out of existence.

**H**OME people say, "I am going into hr this channel and I am going into that." Can you decide what channel the radio is going through? I had a little automobile business in Omaha, on the side, in 1905. I was the proud distributor of the Rambler automobile, the second largest in the United States. One of my biggest retail distributors was a barber in western Nebraska. Can you dictate today where the radio is going? The hardware channel, the dry goods, music or what not. It is a new industry.

**I** JUST want to give you gentlemen a quotation from Goethe, the German poet: "That every business is the lengthening shadow of one man." If you, as an executive of your organization, are thoroughly familiar with the present situation, your organization should be a success. I am not discouraged in the radio industry. All pioneer developments have to go through a period such as we are going through. If I fail, somebody else will succeed. A billion dollar industry cannot fail. The bigger you get, the harder it is to fail. The radio industry is too big to fail. If you and I cannot make a success out of it, gentlemen, somebody will develop it who can.

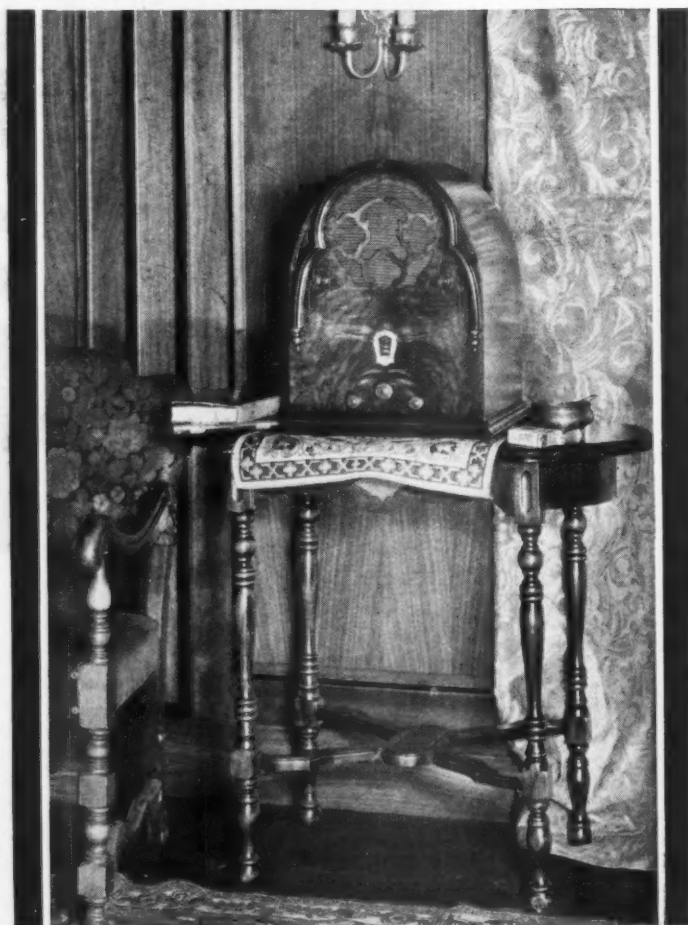
87%

*More Programs  
with Clearer Tone*

*Superheterodyne*  
*by* **SILVER-  
MARSHALL**



Model D1—Nine-Tube—



Model F4—Seven Tube—

## Vario-Mu

Model "F" Ch

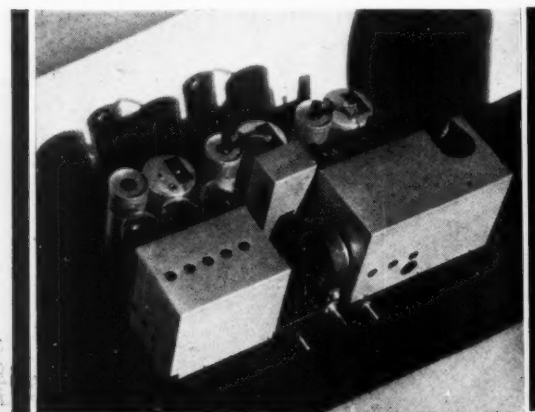


## SUPERHETERODYNE

**P**ROBABLY nearly every other ad this month is "the fact remains that only two lines created anything show, as everybody who was there knows—and Look at the four models of the 1931-32 Silver-Mar compare them with anything else advertised in this m And the new direct-to-dealer plan took like measles you a living, profitable discount, plus a laid-down service allowance—all without strings attached.

No use talking features—the answer is "yes," for each of this year—one or two pentodes, and two to four radiating, absolute 10 kc. selectivity anywhere, more that's a real revelation for super-hets, fine deep bass sets. And the ten-tube model "G" has the only control system that, for the first time in radio, gives volumes, and a clarity never before even approached in cabinet values! But our story is simple—we guarantee to perform anything in its price class—no holds barred. And what about the judgment of the big dealers? Foster & Waldo in Minneapolis, and Grinnell & Co. in business, have signed up for S-M. Those are just the outlets in the country who are "in."

If you want the dope that made these, and make your pick S-M for 1931-32, just send in your letter with your and profit ideas geared for "poor business" and make profits for you *this* season and next, too.



Model "D" Chassis

Model "F" Chassis



# Pentode

## ETERODYNES

is month is "the hit of the trade show." But the indisputable  
ted anything even bordering on a sensation at the R.M.A.  
knows—and one of these two was Silver-Marshall.

2 Silver-Marshall line, look at their prices and features—  
ised in this magazine, and judge for yourself.

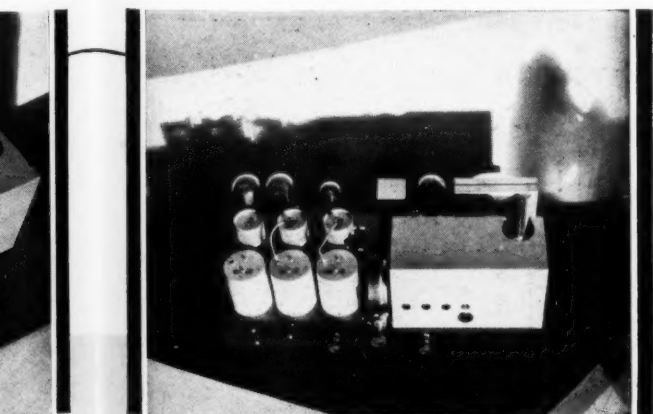
like measles, for it takes all the water out of prices, gives  
laid-down freight allowance, and a big advertising and  
tached.

"yes," for each model has every new engineering feature  
two to four vario-mu tubes, tone control, absolutely non-  
ywhere, more sensitivity than anyone can use and tone  
e deep bass and clarity of treble superior to the best t.r.f.  
" has the only new feature of the year, a dual tone-  
e in radio, gives the same tone quality at low or high  
re even approached by any radio. And look at the  
imple—we guarantee any one of these sets to out-  
—no holds barred!

f the big dealers? Well Lyon & Healy in Chicago,  
and Grinnell's in Detroit—the leaders of the music

Those are just three out of eighty-five of the biggest

"  
hese, and many more big fellows all over the country  
n your letterhead, and you'll get 24 pages of selling  
r business" 1931, not "boom" 1929—ideas that will  
nd next, too.



Model "G" Chassis



Model G6—Ten-Tube with Dual Tone-Control—



Model F5—Seven-Tube—



## ENGINEERING FEATURES

**VARIO-MU TUBES**, the latest development in radio, giving for the first time a new freedom from all noises.

**PENTODE TUBES**, with twice the power of the 245 tubes used in most sets, and four times the sensitivity.

**SUPERHETERODYNE** perfected circuit, the only circuit powerful enough for trans-Atlantic liners and the great commercial radio systems.

**NO AERIAL REQUIRED** besides the one built right into the cabinet. Move it anywhere. No wires to change.

**TONE-CONTROL**, so that the owner can adjust the tone the way he likes it best, not the way a radio engineer thinks he ought to have it.

**SELECTIVITY and SENSITIVITY** that give you a choice of forty to eighty programs anytime.

**SPECIAL DYNAMIC SPEAKER** accurately matched to the set.

**NON-RADIATING** oscillator with shielded tubes, condenser, and doubly shielded coils, keep your set from interfering with your neighbors' radios.

### SILVER-MARSHALL, Inc.

6401 W. 65th Street

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Chicago, U. S. A.

122 E. 42nd Street, New York City

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75 Sherbourne St., Toronto

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# Trade Show A Success

## 22,300 attend « « « « «

### Big business reported by most exhibitors « «

THE attendance during the initial two days was small and disappointing but the final days of the show saw an avalanche of dealers pouring into Chicago in such numbers that the total registration soared to more than 20,000. Trade Show executives regard this late influx of visitors an indication of present-day economy by dealers in permitting themselves only a limited stay in Chicago at minimum expense. However, many exhibitors reported unusually large orders signed and the consensus of opinion was one of satisfaction and optimism. The Stevens, Blackstone, Congress and Auditoriums hotels were loaded with exhibits. Michigan avenue was flag-bedecked with signs of welcome. The honor of making the first group registration was shared by Los Angeles, Boston and New Orleans delegations. They arrived Sunday morning, June 7, aboard special pullmans within an hour of each other.

More than 600 dealers in the "Philco" party disembarked at the Navy Pier on the following day. Three hundred came on the New York Central radio special and another 175 arrived on the Jersey Radio Special of the Pennsylvania Line. Twenty-four thousand square feet of display space was required to show the many new models on exhibit in the auditorium and ball rooms of the Stevens. Most sets shown were of the super-heterodyne type. TRF receivers fell into second place.

#### Auto Radio Increasing

The number of auto radio receivers already known to have been installed this year indicates a growing popularity for this type of set. Advances incorporated in auto-radio receivers permit excellent results both as to sensitivity and tone.

#### Short Wave Receivers Gain in Popularity

Undoubtedly stimulated by foreign broadcasts by American networks, enthusiasts of the radio public are eager to listen to trans-oceanic broadcasts, direct, through the medium of a short wave receiver in their homes. As a consequence the construction of factory made short wave receivers is sharply upward.

#### Introduce New Circuit

A new circuit is the Stenode. It is designed to provide a maximum of selectivity through the use of a special circuit in which is introduced a mechanical oscillator in the form of a quartz crystal.

The radio signal in passing through the Stenode circuit actually undergoes definite changes. The wave is literally "forced through an exceedingly narrow aperture," and then reconstructed by means of what is known as a corrective circuit placed in the audio system.

#### New Tubes Introduced This Year

This year sees the introduction of the variable-mu tube in radio frequency stages and the pentode tube in the output stage of radio receivers. The use of these new tubes is considered by the industry, not at all revolutionary, but a normal development such as can be expected when research men labor diligently to advance the art.

The variable-mu tube has as its principal attribute the elimination of cross-talk; whereas the pentode is designed for a greater output with a smaller audio system. Pentodes are being used in sets designed for a single output tube or a push-pull stage depending largely upon the space available in the chassis design.

### Optimistic Statements By Trade Executives « « «

*Henry C. Forster, Executive Vice-President, Utah Radio Products, Chicago*

"Never at any previous trade show have we had so many enthusiastic buyers completing arrangements for products our company manufactures.

"Of special importance, too, was the increased volume of foreign business contracted not only by ourselves but by other companies as well."

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*Tom White, Sales Manager, Jensen Radio Mfg. Co., Chicago, Ill.*

"The business signed by our company during the trade show is highly satisfactory. During the show we introduced a new type of speaker, a permanent magnet dynamic. Since this operates on one of the battery sets, the rural set-owner will now have as good quality reception as his city cousin."

#### "Auto" Tubes Important Development

The automobile series of tubes constitutes another outstanding tube development of the year. While designed to reduce the drain on the automobile battery, when installed in auto-radio, they lend themselves for use in sets designed for rural trade, far beyond the extension of power lines. Here, low drain is just as important to the consumer as it is to the automobile owner.

#### Circuit Design Governs Choice of Tubes

Screen grid tubes continue to be manufactured and used in large quantities. They are not displaced by the variable-mu because this latter tube is used only in circuits designed for it. The variable-mu does, however, assume the position formerly taken by the screen grid.

#### Television Receivers on Display

Four manufacturers of television were among this year's exhibitors. One of these exhibited at last year's trade show, while the others but recently began the manufacture of commercial sets and kits.

#### Big Variety in Radio Furniture

Many unique cabinet designs offer the prospective set owner widest variety in radio furniture. Artisans of the cabinet makers, furthermore, have ingeniously contrived to conceal the radio chassis and the loud speaker in furniture, itself. Such pieces as tables, desks, secretaries, a piano, or a grandfather's clock may now have a complete radio concealed from view.

*H. A. Beach, Radio Manager, Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.*

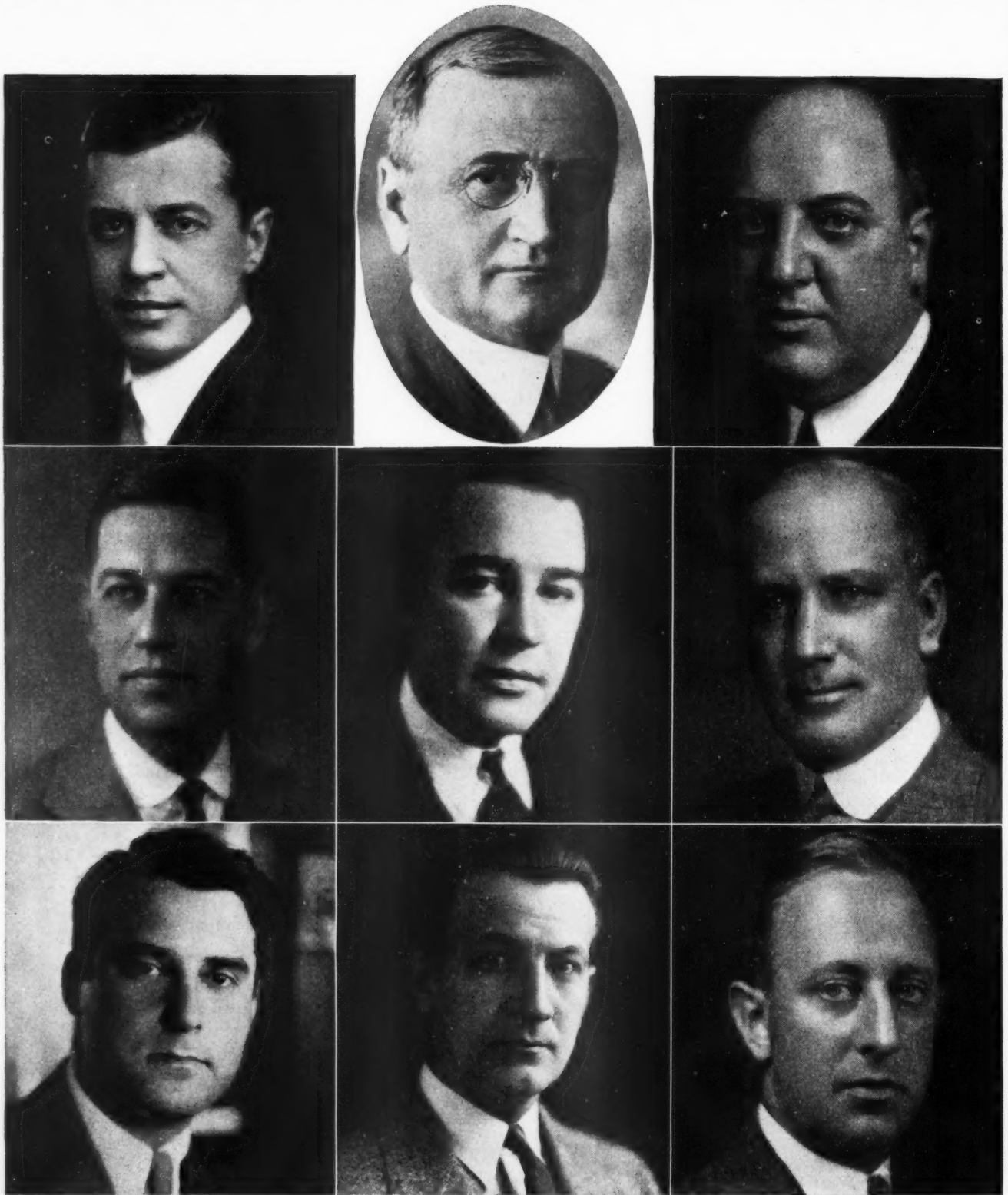
"Radio today supplies a more vital need than ever before. Its worth to the home has been tremendously increased through the progressiveness of the broadcasting interests, which are not standing still, but making rapid progress.

"The receiver manufacturer is charged with the responsibility of keeping pace with those developments. The radio industry is judged—in fact can rise no higher than the standards in quality manufacturing maintained by set producers.

"This is the great responsibility of the manufacturers today, and I predict without the slightest doubt that the industry will meet this challenge.

"Our experience in meeting dealers at the radio trade show greatly strengthens our beliefs in the necessity of continuing to produce the very best products we know how."

# Newly Elected ♦ RMA Officers



## Prominent Executives Elected to R.M.A. Posts

**Top Row:** *Left*—Fred D. Williams, manager of the Tube Division, National Carbon Co., Inc., Vice-President of the new R. M. A. Board. *Center*—J. Clark Coit, president of U. S. Radio & Television Corp., is the R. M. A.'s new Executive Head. *Right*—W. J. Barkley, sales manager of DeForest Radio Co., is another of the new R. M. A. Directors.

**Center Row:** *Left*—N. P. Bloom, president of Adler Mfg. Co., a Vice-President of the R. M. A. *Center*—Leslie F. Muter, newly elected Treasurer of the R. M. A. *Right*—A. S. Wells, president of Gulbransen, newly elected R. M. A. Vice-President.

**Lower Row:** *Left*—E. R. Farny, president of All American Mohawk, is one of the new R. M. A. Directors. *Center*—E. V. Hughes, sales manager of Wasmuth Goodrich, another newly elected R. M. A. Director. *Right*—Arthur Moss, president of Electrad, a new R. M. A. Director.

# Trade Show Opinions

**E**XCELLENT business during the fifth annual trade show of the Radio Manufacturers Association was reported by a large majority of exhibiting manufacturers.

Attendance was normal under existing conditions, it was stated by Bond Geddes, executive vice-president and show manager of the R. M. A., and passed the 22,300 mark at noon on Friday, June 12, a few hours before the show closed.

"While the attendance was smaller, as expected, than the peak radio year of 1929 and the association's show last summer at Atlantic City, actual business transacted was reported generally to be better. The net result was a smaller attendance but a better business. The trade show visitors this year came for business and not pleasure. Business was the keynote of the entire show week and actual orders totaling several millions of dollars were reported."

Several short interviews by leading manufacturers follow:

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*N. P. Bloom, President Adler Manufacturing Co., Louisville, Ky.*

"The general atmosphere at the radio trade show in Chicago was one of wise caution born of experience with the many quick and sudden changes that in the past have taken place in this industry. We believe that this will redound to the credit of everyone in the trade as well as the consuming public.

"Personally, we enjoyed very nice business from a large number of concerns and established excellent foreign connections.

"I believe that by being keenly in touch with the trade, which can best be done through the information disseminated from the Radio Manufacturers Association, all of the manufacturers should enjoy a reasonably good business for the balance of the year."

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*Eugene R. Farny, Chicago, President, All-American Mohawk Corp.*

"The R.M.A. convention has been a revelation to us of what a real line of radios and refrigerators will produce in the way of orders from wide-awake distributors.

"The week has been an unqualified success.

"We also believe Chicago is an ideal place for a convention and feel

that this week marks the beginning of an undoubted upward turn for business in general and particularly for Mohawk refrigerators and Lyric radios."

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*L. J. Chatten, Sales Manager, F. A. D. Andrea, Inc., L. I., New York*

"While the attendance was slightly smaller than at the Atlantic City meeting, visitors to the Radio Manufacturers Association convention and trade show came to transact and did transact business. Not only was business good, but what is better, 'entirely satisfactory'."

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*E. E. Kauer, President, CeCo Mfg. Co., Inc., Providence, R. I.*

"So far as our company was concerned the trade show was highly successful in orders actually booked. They came from our old distributors as well as a number of new ones who were lined up during the week.

"The jobbers thus backed their confidence in the radio industry by placing firm orders. They feel that they can continue to get the business by going after it aggressively."

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*Neil Bauer, Sales Manager, Crosley Radio Corp., Cincinnati, O.*

"We were very well pleased with the serious nature of the people who attended the show. Everyone evidenced a desire to learn all he could about the merchandise that was being displayed. The showing of the new

1932 lines at the show met with enthusiastic reception.

"The welfare of the radio dealer is strongly in the minds of the officials of the Crosley Radio Corp., and is being looked after this year in the announcement of a new motor-driven electric iron known as the Crosley Moto-iron. The primary object in placing such a household article on the market is to give the radio dealer a year-round business."

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*H. W. Simpson, Chicago Manager, Essex Wire Corp., Detroit, Mich.*

"Within 15 minutes after the show opened on Monday, even before we were properly set up in our suite at the Stevens, we sold 150,000 feet of cord to a new customer, a company that we did not know used our product! From the standpoint of volume of business transactions and from the tone and sincerity of inquiries, we judge that there will be considerable improvement in the very near future."

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*Statement by McMurdo Silver, President, Silver-Marshall, Inc.*

Silver - Marshall's "Factory - to - Dealer" policy created a great deal of interest at the show. Eighty-five percent of the dealers who looked in at the S.-M. demonstration rooms were in favor of the plan. Hundreds were franchised and many substantial orders were taken. Five thousand dealers throughout the country have written asking details on the proposition.

The Silver-Marshall line of four superheterodynes ranges from \$59.50 with tubes to \$109.50. The highest priced model is a ten-tube with variable-mu and pentode tubes, featuring an entirely new dual tone control.

## POLITICS AND COMMERCE MEET

Chicago's Mayor, Anton J. Cermak, learning to tune a Chicago made radio set, presented him as a feature of the All-Chicago Jubilee by Ross D. Siragusa, president of the Transformer Corporation of America, makers of Clarion radio.

Mr. Siragusa is only 24 years old and is probably the youngest recognized important executive in the country. He was honored during the Jubilee by many of Chicago's most prominent business men.



# REPORT OF THE TRADE SHOW

## ◀ BOOTH BY BOOTH ▶

*The Trade Show Reporters of "RADIO" take you through the Show.  
They give you the high-lights and side-lights on all things new. . . .*

### Echophone Has Entirely New Line

Model 40 baby mantel set; four tubes, one 27, one 35, one 47 and one 80; \$32.75 list, complete. New cabinet design and larger dynamic speaker.

Model 60; six-tube superheterodyne mantel set. Two 24's, two 35's, one 47 and one 80. Automatic volume control. \$53.75 list, complete with tubes.

Model 80, eight-tube mantle type superheterodyne with new cabinet and automatic volume control. One 27, one 24, three 35's, two 47's and one 80. \$69.50 list, complete with tubes.

Model 90, full console, eight-tube superheterodyne with special large chassis. Automatic volume control; 38½" high, 22¾" wide, 14½" deep. Four 35's, one 27, two 47's, one 80. \$89.50 list, complete with tubes.

Also a D.C. mantel receiver, seven tubes. \$59.50 list, complete.

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### Jensen Has Two New Speakers

Permanent magnet speaker, type PM-1, equipped with Tympanum Flexum one-piece cone. The permanent magnet supplies the energy in the air gap. Its strength will not deteriorate even after several years of use. No field current required. List price \$15.00.

New Jensen Concert Jr. Models J-1 and J-2, with one-piece cone. Electro-dynamic type; 25000 ohm field wound with No. 35 wire and 18" cords. Not available for A.C. operation. List price \$8.50.

Other Jensen speakers include the Auditorium model with one-piece cone, Concert models D-15, D-15-AC, D-9-AC and D-9, all with one-piece cones.

Thos. A. White, Jensen sales manager, reports that business has increased 250 per cent during the first six months of 1931. Foreign business also shows a brisk advance with 80 per cent of the theatres in Central Europe now using Jensen speakers.

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### Erla

A midget at \$29.75 list, with four tubes, a pentode, a variable-mu, a screen grid and a rectifier. Dynamic speaker. Sales largely confined to department stores. Also another Erla midget at \$39.75 with same chassis but with Warren telechron clock.

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### Duovac Tune-A-Lite

Silent automatic tuning with visual station and tone indication. Automatic volume control by means of a gas-filled tube. Extraneous noises, static and other electrical disturbances do not actuate the light column. Every audible station on the dial can be brought in even though the volume control is turned down to a point where not a sound issues from the speaker. A small column of brilliant light appears in the Tune-A-Lite as a station is approached. This column of light rises to its maximum height as peak resonance is reached and then gradually diminishes as station is passed. Duovac created quite a stir at the trade show by presenting this interesting device.



*The New Westinghouse Columnaire Junior Radio Set*

### RCA Victor

Among the new models exhibited were the deluxe radio-phonograph combinations with automatic record changers. The RAE-68 at \$495 with radiotrons and the RAE-79 at \$945 with radiotrons. Both have remote control, entirely new type record changers, superheterodyne chassis and magnificent cabinets.

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### Kennedy Prices Now Start at \$42.50

A short wave converter, "Kennedy Globe Trotter," at \$42.50, with tubes. Has one 27 and one 24 tube. Filament transformer built-in. Gets its "B" power from the radio set to which it is connected. Two-dial control; 15 to 200 meters. Makes a short-wave superheterodyne of any receiver.

The new Kennedy Coronet midget with pentode, variable-mu and 8-inch electro-dynamic speaker at \$44.50 list, complete.

Imperial midget superheterodyne with 9-inch electro-dynamic speaker at \$67.50, with tubes.

Royalette console with pentode and variable-mu tubes, \$62.50 complete.

Sovereign console with pentode and variable-mu tubes. Superheterodyne. \$97.50, with tubes.

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### Clarion Jr. Model at \$39.50, Complete

Clarion's model 40 is a midget t.r.f. receiver with five tubes, including multi-mu and pentode. Super-power amplifier. Vernier dial. Static and tone control. Three gang condenser. Oriental walnut cabinet. Electro-dynamic speaker. \$39.50 list, with tubes.

Clarion model 91 console, eight-tube superheterodyne. Multi-mu and pentode. Automatic volume control. Static reducer. Full vision dial with light beam indicator. \$99.50 list, with tubes.

Clarion model 90 mantel superheterodyne with automatic volume control, light beam

station selector, full visioned. Multi-mu tubes and pentode. Eight tubes. \$79.50 list, complete.

Clarion model 81 console superheterodyne with seven-tube multi-mu and pentode chassis. Full vision dial and light beam station indicator. \$84.50 list, with tubes.

Clarion model 95 console superheterodyne with Dual Speakers. Eight tubes, including variable-mu and pentode amplifier. \$129.50, with tubes.

Clarion model 80 mantel superheterodyne with multi-mu and pentode amplifier. Static reducer and full vision light beam indicator station selector. Seven tubes. \$67.50 list, complete.

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### Stromberg-Carlson Shows Three New Superheterodynes

No. 19 console. Four super-control tubes. Pre-selective tuning. \$195 list, with tubes. No. 20 superheterodyne console, \$225 list, with tubes. No. 22 superheterodyne console, \$375, with tubes.

Also four t.r.f. models: No. 10 low console, \$259, less tubes, No. 11 t.r.f. console, \$285, less tubes. No. 12 t.r.f. console, \$355, less tubes. No. 14 t.r.f. console, \$645, less tubes. No. 14 is a multi-record-radio combination and automatically plays 12 records, either 10 or 12 inch, or of mixed size. Provision also made for electric remote control.

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### Tung Sol Shows New Tubes

Pentodes, variable-mu and all of the other new types of tubes were shown by Tung Sol. Twenty-one of the latest types were on display.

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### Pilot Shows Many Items

Pilot Radio & Tube Corporation exhibited the Pilot Universal Super Wasp Receiver, 16 to 650 meters. The A.C. model lists at \$85.00, without tubes. The net price to the dealer is \$55.00. The new Pilot All Wave table model receiver was also shown, \$99.50, assembled. Television receivers are also being made by Pilot at \$34.50, without power pack or tubes. Power pack factory assembled, \$19.50 additional.

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### Hygrade Tubes Include Newest Types

The Hygrade Lamp Co. of Salem, Mass., exhibited all of the new Hygrade Tubes, including the variable-mu and pentodes. Some interesting data in the form of pamphlets was passed out to show visitors.

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### Jewell Merges With Weston

It was announced that Weston has bought Jewell but that the Jewell instruments would be continued as heretofore. The new Pattern 535 Tube Seller by Jewell is of help to the dealer in selling more tubes. It is also an attractive counter display, being 30 inches high and 28 inches wide. An 8½" meter is used to show tube readings. This Tube-Seller shows line voltage, preheater and short check, a separate test for each type of tube and has a separate test socket for each type of tube.

### Bud Short Wave Converter

\$29.50 list. Tubes and coils mounted atop metal chassis in which other equipment is housed. Vernier dial. A-C operation. Coils available to cover range of 15-190 meters.

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### National Union Radio Corporation

The exhibit of this manufacturer consisted of a showing of all the newest multi-tubes, pentodes, low voltage tubes, etc. A particularly interesting portfolio, "Tube Data Blue Book for 1931," in which is published such unusual information as discounting tables, comprehensive list of tube equipment needed for all types of present-day receivers, characteristic charts, etc., was welcomed by many dealers.

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### Jenkins Television

An elaborate display of many of the newest Jenkins developments captured the attention of show visitors. There were the Jenkins special television chassis; the Jenkins Radiovisor at \$160.00; the Jenkins Self-Synchronizing Receiver at \$175.00; the Jenkins Radiovisor Model 202 at \$135.00; Model JD at \$150.00; Model 102 Radiovisor at \$69.50; Jenkins Self-Synchronizing Motor at \$60.00; Radiovisor Kit No. 2 at \$42.50; Standard 60 line discs at \$15.00; magnifying lens assembly kit at \$7.50; JK-20 Television Receiver Kit at \$69.50; DeForest Audions for JK-20 Receiver at \$11.30, and Jenkins Vision Lamp 601 at \$6.00.

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### Baird Television

Shortwave & Television Corporation had a \$110.00 universal shortwave receiver on display, with wave length range of 15 to 520 meters. Also a kit at \$75.00. Group of Octocoils, 15-200 meters, at \$5.00. Baird Television Receiver No. 36 at \$100.00, completely assembled in table model cabinet. Kit for Baird Television Receiver at \$80.00 complete with motor, synchronizing amplifier, scanning spider, belt, cabinet and lens.

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### Orotone

The Oro-Tone Company, 1010 George Street, Chicago, announced a new type of pick-up and arm. This equipment has been designed to secure reproduction which is almost identical with the original recording. By the needle traveling in a radial line across the record it follows the same path as the original recording needle when the record is made. It is always tangential to the groove of the record regardless of the diameter of the record. This new construction prolongs the life of a record and enables a needle to be used a greater number of times without change.

The pick-up, itself, lies parallel to the face of the record but the needle point is always visible and the body can be turned to a vertical position so the needle can be easily changed. As the overall height is only 2 3/4 inches above the motor-board this equipment is well adapted for use on shallow cabinets.

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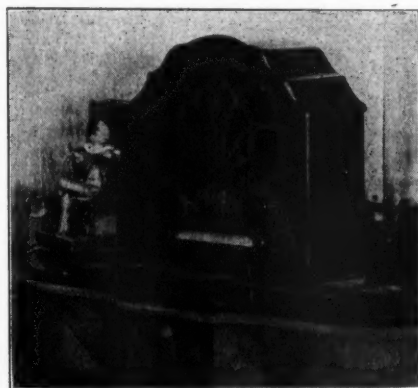
### The New Westinghouse Junior Columnaire

HIS set incorporates a new eight-tube superheterodyne chassis. It has been designed to use two of the new exponential tubes, which give a constant frequency response at any volume level. The tone control also acts as a static reducer. The chassis is fully shielded to cut down background noise and local interference.

The Columnaire Junior sells at \$88.50, complete with tubes.

### Readrite Test Instruments

Set with tube testers from \$20.00 up. De luxe radio service kits, tube short tester, counter tube tester, special adapters, meters and cables, resistors and multipliers. Also an A.C. line voltage regulator at \$6.50.



Erla at \$29.75

### 13-Tube Set By Capehart

One of the new de luxe Capehart models has thirteen tubes, of which four are pentodes in a super-power amplifier. The receiver is part of the large Capehart radio-automatic-phonograph combination for home use or for coin-in-slot operation. The list price of this large model is \$1095. There is another model at \$995; one at \$895; the No. 21 at \$260 with eight-tube radio chassis and the newly improved Capehart automatic record changer, which plays 10 records of either the 10" or 12" size, or a combination of both. The chassis uses two pentode tubes. The 400 Chippendale, the 401 Chinese Chippendale, and the 402 "Adam" models round out a most diversified line of instruments in a wide price range. Particular interest was centered around another new Capehart record changing mechanism which handles 3 to 24 records, 10" or 12", mixed, in any sequence, both sides of each record in correct succession, continuous repetition or rejection of any record as desired and fully automatic and continuous in operation. Record changer is equipped with a special constant speed (no governor) electric motor, which operates both the turntable and record shifting mechanism.

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### Ken Rad Acremeter

All of the newest types of tubes are in the Ken Rad line. Also the new Acremeter, a large and elaborate tube testing outfit which helped sell \$1621 worth of tubes for one radio dealer in the first twenty-three days of Acremeter operation. No technical knowledge is required in order to operate it. It tests filament voltage, plate voltage and grid voltage. All tubes are tested in the same manner. It also tests for mechanical defects, shorted element or open filament. Power output and amount of life left in the tube are also shown by meter test. Sold to dealers for the purpose of enabling them to sell more replacement tubes, inviting more frequent checking of tubes, etc.

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### Lower Priced Samson Amplifiers

PAM-71. Uses one '24, one '80 and two '45's. \$39.50 list, without tubes. Maximum undistorted output, 3.2 watts. New MIK-71 microphone amplifier at \$19.50. New 7100 Combination amplifier and dynamic speaker at \$49.50, less tubes. New hand microphone and output transformer with choke. PAM-39, PAM-29 and PAM-59 also on display.

### Rola Power Series Speakers

Model R-AC4 for 280 rectifier tube; 9-inch cone. Oxide type rectifier speakers, special-purpose heavy duty speakers and a complete line of electro-dynamics for midset set manufacturers and for use in larger sets.

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### Crowe Name Plates

A large and complete line of escutcheons, tuning units, full vision tuning dials, drum controls, clock dials and license plates.

## "Air-Cell" Farm Sets Numerous at Trade Show

A SIGNIFICANT feature of this year's Radio Manufacturers Association Convention and Trade Show in Chicago was the definite indication that the industry has started a "back to the farm" movement. It has already gained such momentum that nine of the country's leading set manufacturers are exhibiting the new type air cell battery operated receivers.

This is in striking contrast to last year's convention at Atlantic City, when battery operated receivers received little attention. Exhibitors are not only showing their air cell sets this year but are, from all indications, laying extensive plans to invade the long neglected market of some 4,000,000 buyers living beyond power lines who are without any kind of receiver, in addition to several million more who are using obsolete and unsatisfactory battery sets.

The list of manufacturers exhibiting the air cell sets includes Atwater Kent, Brunswick, Colonial, Crosley, Erla, General Electric, General Motors Radio, RCA-Victor and Silver-Marshall.

The explanation lies in the fact that not until this year has there been a battery operated set in which all the unfortunate features of old type battery sets are eliminated, and which offers to the unwired home the same quality of reception, economy of operation, and freedom from trouble enjoyed today by the city user of a-c receivers.

But what is even more important to the prospective purchaser of such sets is the economy of operation and convenience of upkeep due to the elimination of the storage battery. "A" current is derived from a revolutionary type of "breathing battery" developed in the research laboratories of National Carbon Company along with the 2-volt tubes. It is, in fact, these two developments which together have made the air cell sets possible.

The new Eveready air cell "A" battery literally breathes the life giving oxygen from the air to maintain constant voltage over a long life. Based on an average use of three hours a day, it will operate a seven-tube set utilizing the new 2-volt tubes for an entire year, or well over 1,000 hours. The constant voltage feature of the battery, it is pointed out, eliminates one of the main sources of trouble with previous types of battery operated sets with their manually operated rheostats and resulting frequent tube burn-outs.

With only 2,000,000 of the 6,000,000 unwired homes in the country enjoying radio reception today, several leaders in the industry have expressed the belief that the air cell sets will be one of the most important things in the radio trade this fall. Added to the fact that at last there is a satisfactory set available to farmers is the helpful influence of the Department of Agriculture, in Washington, which is exerting every effort to induce farmers to buy radios both for pleasure and as an aid to the business of farming.

**Micamold Radio Corp.**  
Brooklyn, N. Y.

Micamold has developed two new products, a molded carbon resistor, and a dry electrolytic condenser. They were presented at the show for the first time. Other products show result of engineering refinements.

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**National Carbon Company**  
New York City

The National Carbon Company introduced seven new tubes; an AC pentode; two variable-mus; and four tubes for automobile radio sets and DC current sets. The company also exhibited the Eveready air-cell "A" battery for use in districts without power.

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**Operadio Manufacturing Company**  
St. Charles, Ill.

This company announced a new completely AC operated amplifier especially designed for sound-on-film use. Designed primarily for use in 300-800 seat theatres. The amplifier itself is not only completely AC operated, but also furnishes all of the necessary power that is required for all of the associated apparatus that is used in conjunction with sound-on-film reproduction. The amplifier may be adapted for use with sound-on-disc so that a selection may be obtained between sound-on-disc and sound-on-film.

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**Racon Electric Co., Inc.**  
New York City

Racon exhibited a "9 Unit Aeroplane Horn" with three mile ground projection capacity; and a combination for using three horns with one unit.

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**Radio Master Corporation**  
Bay City, Mich.

Radio Master had a complete line of radio furniture including both conventional models and authentic period furniture models. F. B. Ward, the company president, believes: "Opportunity for the sale of really fine and distinctive furniture, particularly period models, was never better."

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**Short Wave and Television Corp.**  
Boston, Mass.

Company exhibited new type short wave and television equipment.

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**Sprague Specialties Company**  
Quincy, Mass.

Sprague Specialties invades the home talkie field with the "Sprague Visionox" in two models, one portable and the other in cabinet form. Synchronization is entirely automatic. Both models play up to 16 in. records and can be used separately as phonograph if desired. Offered at popular price.

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**Stewart-Warner Corporation**  
Chicago, Ill.

This company presented its "Silver Jubilee Line" as culmination of 25 years in the production of precision products. There are 10 models ranging from the 4-tube "Metropolitan Midget" to a de luxe console.

The new low-wave converter is an outstanding item. It is offered as an individual unit and a built-in feature in five of the consoles.

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**Sylvania Products Company**  
Emporium, Pa.

Eight new tubes were introduced by Sylvania. Four are for use in auto-radio and include: a screen grid amplifier; an amplifier and detector; a power tube; and an automobile pentode. All are small in size.

The four other tubes are: a pentode; a two volt power pentode for battery sets; the "super-control tetrode"; and another variable-mu.

**Silver-Marshall**

Direct-to-dealer policy. New merchandising plan. Longer profit margin. Lower priced merchandise. New merchandise on exhibit at the trade show includes: A 7-tube vario-mu pentode midget superheterodyne at \$59.50 list, with tubes. A 3-tube superheterodyne short wave converter in walnut cabinet for \$59.50 list. A 7-tube vario-mu pentode superheterodyne console at \$69.50 list, with tubes. A 9-tube vario-mu pentode superheterodyne console at \$89.50, with tubes. A 10-tube vario-mu pentode superheterodyne console at \$109.50 list, with tubes. A new line of all-wave chasses for private label merchandising. Chassis for set builders and service stations. Complete line of power amplifiers, parts, speakers and public address systems. Short wave equipment. Combination short

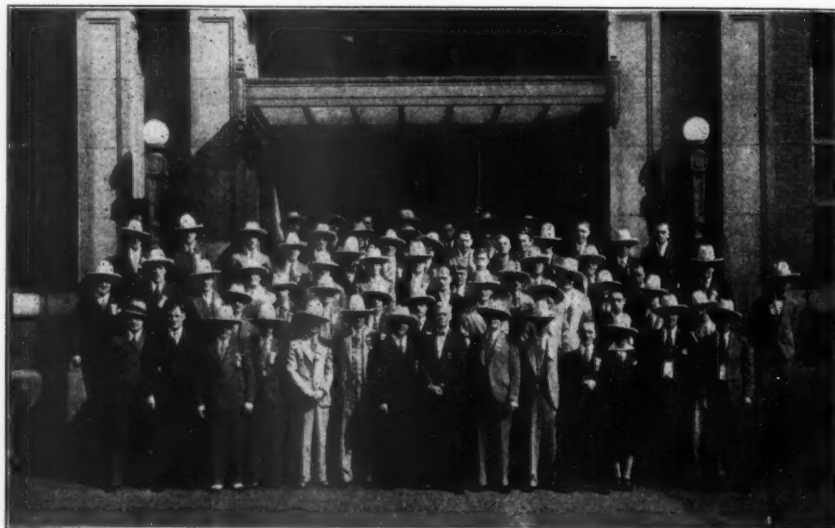
and long wave chassis. Chassis for D. C. operation.

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**United Air Cleaner Corp.**  
Chicago, Ill.

Superheterodynes with pentode and variable-mu tubes were featured in "Sentinel" radio receivers. Double screen grid detection, static modifier and acoustic compensator are among the refinements.

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**Webster Electric Company**  
Racine, Wis.

Webster has a new model electric pick-up of extreme compactness. A built-in volume control at the base provides a full regulation at the turn of a knob. Another interesting exhibit was the Webster power amplifier for "sound trucks."



## "House of Magic" Inspiring to G. E. Dealers

MORE than fifty General Electric radio dealers and dealers' salesmen, winners in the Full Range Radio Roundup, paid an interesting, entertaining and inspiring visit to General Electric's famous "House of Magic" in Schenectady, N. Y., as guests of the Radio Division of the General Electric Company. Coming from practically every section of the United States, these sombrero-crowned Full Rangers convened in a two-day session which was a reward for their successful efforts in the sale of General Electric radios and an inspiration to continued good work.

Among the Full Rangers attending were: Al Baker, Baker Bros. Radio Co., Newark, N. J.; Ed. E. Helliwell, Elm Street Auto Co., Pittsfield, Mass.; Dudley Van Binder, Central Electric Co., Battle Creek, Mich.; C. D. Trout, Cedar Rapids, Iowa; Russell Seely, the Seely Hardware Co., Columbus, O.; Tyre L. Roper, Electric Appliance Co., S. Jacksonville, Fla.; Harry Wade, Universal Radio and Supply Co., St. Louis, Mo.; Harvey M. Olmstead, Denver, Colo.; C. H. Lines, C. H. Lines Co., Fort Wayne, Ind.; Stanley Lersch, Tri-Par Radio Co., Chicago, Ill.; Fred M. Seymour, Seymour Radio Shop, Detroit, Mich.; Herbert J. Schlactus, Brooklyn Radio Service, Brooklyn, N. Y.; C. D. Snyder, Snyder Bros. Electric Co., Ponca City, Okla.; John W. S. Meyers, Radio Sales & Service,

Schenectady, N. Y.; Vance P. Marquis, Maltzahn's Co., Cincinnati, O.; J. W. Riser, Jr., Broad River Power Co., Columbia, S. C.; P. Sherman, Rezendes Electric Co., New Bedford, Mass.; W. C. Hohl, George H. Schwartz Co., Lehigh, Pa.; G. C. Bunker, G. C. Bunker Co., Beloit, Wis.; David E. Johnson, Radio House, Tacoma, Wash.; E. J. Walter, Hale Brothers, San Francisco, Cal.; Fred C. Steppan, Barker Bros., Los Angeles, Cal.; George Ruiter, Eugene Radio Co., Eugene, Ore.; J. L. Walker, 10th Avenue Radio Shop, Seattle, Wash.; C. V. Stackpole, Jr., C. V. Stackpole & Son, Inc., Lynn, Mass.; Max Cassover, Royal Eastern Co., N. Y.; Elmer K. Koeper, Mueller Radio Co., Milwaukee, Wis.; John E. Mack, Mack Bros. Radio Co., Chicago, Ill.; Theodore Tedesco, Larkin Co., Buffalo, N. Y.; H. E. Moore, Kansas City Power & Light Co., Kansas City, Mo.; J. I. Bozenet, Glens Falls, N. Y.; M. Denowitz, Newark, N. J.; W. Germaine, Glens Falls, N. Y.; S. Kovesch, New York, N. Y.; H. S. Lefavour, Salem, Mass.; C. Maltzahn, Cincinnati, O.; M. McIntosh, Portland, Me.; H. H. Morrill, Lynn, Mass.; H. Rice, Detroit, Mich.; J. B. Villeneuve, Quebec, Canada, and E. T. White, Wollaston, Mass.

General Electric representatives in attendance included: B. C. Bowe, R. Del Dunning, A. E. Pierce, E. N. Sampson, Eugene Danziger, A. C. Sanger, A. E. Feldstein, P. F. Hadlock, James Ramsey and J. L. Stone.

#### Fada Models from \$69.50 to \$175

Model 51, table model. Pentode and variable-mus. \$69.50, list.

Model 52, lowboy console. \$89.50

Model 45, lowboy console with pentodes in push-pull, \$112.50.

Model 48, de luxe sliding door lowboy; automatic volume control, push-pull pentodes, automatic flashograph, tone filter and noise suppressor. \$147.50.

Model 49, same chassis as 48; de luxe six-legged highboy. \$175, list.

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#### Cosmotone Home Talkies

Three models, from \$250 to \$295. A dynamic speaker is mounted on the rear of a combination baffle-board-screen, similar to the method used in theatres where talking pictures are shown. A large library of subjects is available; 16-inch records and 18 mm. film are used. The projection and tonal recording are good. Resistance coupled amplification with push-pull pentode tubes makes available more than 6 watts of audio energy to drive loud speaker.

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#### Stewart-Warner Shows Many New Models

An A.C. operated short wave converter, one dial control, in walnut cabinet, \$23.95 complete with tubes. "Metropolitan Midget" at \$34.95, complete with four tubes. "Apartment Model" at \$52.95, a midget superheterodyne with variable-mu and pentode tubes and tone control. "Tudor Console" at \$65.75, complete with variable-mu and pentode tubes, tone control and dynamic speaker. "Portable Console" at \$67.75, with tubes, variable-mu and pentodes. Also has television terminals. Can be had with built-in short wave converter for \$90.75. "DeLuxe Console" at \$71.75, complete with variable-mu and pentodes and television attachment. Can be had with built-in low wave converter at \$104.75. "French Console" at \$71.75 with variable-mu and pentode tubes and television terminals. With built-in short wave converter, \$93.75.

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#### Electra Corporation Radio-Phonograph

Plays 24 ten-inch records, both sides, automatically; \$447.50 to \$495. Has in-built radio chassis and power amplifier. Coin box for coin-in-slot operation.

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#### Echophone 4-Tube Mantel Set at \$32.75 List

The new Echophone line includes a mantel receiver with the new tubes. It retails for \$32.75 and has one '27, one '35, one '47 and one '80. A new Echophone 6-tube superheterodyne mantel set will sell for \$53.75, with tubes. Another with 8 tubes at \$69.50 complete. A console Echophone receiver, 8 tubes, at \$89.50, with tubes, completes the new Echophone line.

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#### Home Movie Camera By Stewart-Warner

\$50.00 list, complete with leather bound carrying case. Uses either 50 or 100-foot reels of 16 mm. film. Full vision view finder. Spring motor driven. Uses standard f3.5 lens.

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#### Clago Private Brand Radio

Clago Radio Corporation, Chicago. A complete line of very low priced private brand chassis, table models, clock models, midgets and consoles. New "Radiotime" combination electric clock and radio. Also an inexpensive 4-tube chassis for department and chain store sales. Eight and 9-tube superheterodyne chassis and complete receivers. CUB midget at \$29.95 list, with tubes, including a multi-mu and pentode.



Clarion Junior at \$39.50 Complete

#### \$49.50 Automobile Radio By Motorola

Two new automobile radio sets made by Galvin Manufacturing Co. of Chicago and named "Motorola." One at \$49.50 list. Another deluxe model at \$69.50 with two 238 tubes, one 37 tube, two 35 tubes and 1 24. Pentodes are in push-pull. This deluxe model has illuminated dial remote control unit, which is attached to the steering column of the automobile. It also has a tone control and safety lock and key.

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#### Triad Shows All New Tubes

Triad Manufacturing Co., Inc., had on display all of the newest type tubes as well as a number of special purpose tubes and photoelectric cells. More than two dozen varieties of tubes were on exhibit. Some special European type tubes and other tubes for television work are in the laboratory.

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#### Echophone's New Midget Line Has Automatic Volume Control

Two new midgets and one low priced console. Model 60, 6-tube pentode with variable-mu and automatic volume control, \$53.75, list. Also another midget, Model 80, 8-tube pentode, variable-mu and automatic volume control, \$69.50, list. Model 90 console with 8 tubes, pentode, variable-mu and automatic volume control; 10-inch speaker; \$89.50, list. Full vision illuminated dial and beautiful cabinet design.

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#### Sparton Line Starts at \$45.00

Model 5 midget, \$45.00 complete. Model 15 console superheterodyne with multi-mu and pentodes at \$99.50, complete. Model 10 superheterodyne midget with multi-mu and pentodes at \$69.50, complete. Model 9 console at \$62.50, complete. Model 25 superheterodyne console with automatic volume control at \$136, complete. Model 26 console at \$165, complete. Model 30 radio phonograph combination with automatic record changer at \$235, complete. Model 35 radio phonograph combination, automatic, at \$585, complete.

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#### Diversification in Radio Manufacture

Starr Piano Company is making pianos and refrigerators.

Jesse French Company is making radio sets and caskets.

Steinite is making radio sets and electric clocks.

#### Speed Tubes Are of New Type

Cable Radio Tube Corporation's new line includes all of the new pentodes, multi-mus and other special purpose tubes. The new Speed line includes a new Foto-Lectric tube, engineered by Lyle. Electrical characteristics of Speed tubes are shown in a new booklet which the company is passing on to dealers and service men.

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#### Frost Minton

Frost-Minton Corporation of New York City exhibited the \$10.50 metal cased three tube midget receiver using one pentode, one screen grid and one rectifier tube. The price of \$10.50 is the dealer's net. The set stands 9 in. high and about 7 in. wide, and uses a dynamic speaker. The Frost-Minton people believe that a wide market awaits this new receiver, and that the kiddies can now have a radio in each room. Other receivers shown are the FM-4, a four tube job, at \$29.50 with tubes; the FM-5, a 5 tube set at \$36.50 and an "Occasional Table" by Smithburn of Adler Royal at \$15.50.

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#### Pierce Airo

The DeWald Companion Receiver, a-c and d-c operation. Pentode superheterodyne and direct current midgets. The new 1932 series is housed in a strikingly beautiful cabinet and is sold at a net price to the dealer for private label resale. Chassis are also sold separately.

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#### Ceco Manufacturing Co., Inc.

A complete showing of all the newest type tubes, including the special radio frequency tube with high voltage amplification and a large number of special-purpose tubes. CeCo presented the show visitors with a handy chart showing average characteristics of CeCo tubes.

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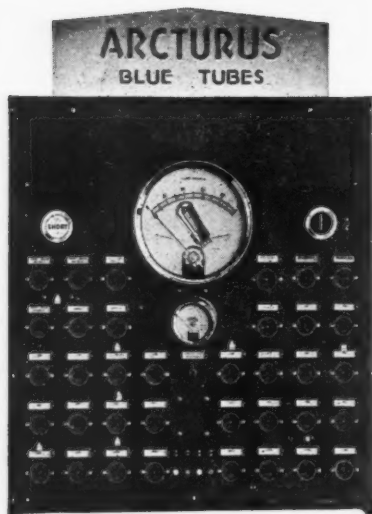
#### Write-It-Yourself Neon Sign

Stewart Warner's exhibit at the show drew the crowds to a clever new "write-it-yourself" neon sign. \$35.00 list. Uses the genuine neon ray and consists of a sign rack 25 inches by 20 inches with novel glass panel front on which can be written, at will, and erased, at will, any advertising message which is reflected by special lighting effects to produce the genuine neon result. In short, you can compare it with a transparent blackboard on which you can write and erase any advertising message at will. The message is written on the glass plate front of the sign with a special lettering fluid or pencil, in your own handwriting, and is reproduced in a glowing neon-red effect. When the blank glass is lettered the powerful fiery red rays from the neon tubing are reflected in the lettering, appearing exactly like a sign actually formed of bent glass neon tubing.

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#### Novel New Clock by Hammond

The Hammond Clock Company exhibited a new type of electric clock which runs for four hours, by an automatically regulated spring motor, after the electric current is turned off. When the current suddenly shuts off, due to line or other trouble, the spring motor keeps the clock running for four hours, within which time the current is usually turned on again and the clock continues to operate as an electrical device. The spring motor then cuts itself out automatically.



#### Arcturus

Because of the unprecedented interest in the new variable-mu and pentode tubes and in view of Arcturus' work in pioneering and introducing these tubes, the booth of the Arcturus Radio Tube Company, Newark, N. J., was one of the outstanding exhibits at the R. M. A. show.

Besides the prominent display of the two new tubes the complete line of Arcturus Blue Tubes, including rectifiers, r-f, a-f, and power types, were also exhibited. These included tubes that are built on the exclusive "unitary structure" principle and the screen grid tube which, in laboratory tests, showed 52 per cent less hum than existing types.

Another focal point of attention in this interesting exhibit was an array of tubes depicting the pioneering achievements of Arcturus. These various tubes and developments were the major a-c contributions to the industry that made possible the rapid perfection of the modern a-c receiver.

**Type 551 Variable-Mu Tube**—By shaping the plate current-grid voltage characteristic so as to minimize the higher order curvature over an extended range of control grid voltage, the type 551:

1. Divides cross-talk by a factor of several hundred and eliminates modulation distortion and receiver "hiss";
2. Eliminates distortion of signals from high-power stations caused by the non-linear relation between the r-f output voltage and the r-f input voltage;
3. Minimizes hum in a-c receivers due to modulation of the carrier by low-frequency hum voltages inadvertently present in the control grid circuit;
4. Obviates the use of antenna potentiometers, local-long distance switches, double pre-selectors, etc.

**Type PZ Pentode Tube**—Because of its increased power sensitivity, the Arcturus PZ Pentode delivers an output of 2.5 watts with but 11.7 volts input, as compared to the '45 triode having a maximum output of only 1.6 with an input of 35.4 volts. This permits the operation of the pentode at maximum output directly from the detector tube.

The high amplification factor of the Type PZ Pentode—95 (as compared to 3.8 with '45 triodes), permits improved and economic circuit design.

The PZ Pentode has nearly four times the power sensitivity of the '45 power tube—a property of decided economic importance when considering output, detector overload and pre-amplification.

#### Cunningham

Considerable interest was aroused regarding developments of new receiver units employing pentode tubes, according to officials of E. T. Cunningham, Inc., 370 Seventh Avenue, New York City, who had on display, among others, the three latest tubes of this type yet introduced to the trade.

The Cunningham exhibit, which included every standard tube sold under the company brand, was in direct charge of company tube engineering experts, while also attending were the leading executives of the organization, including: George K. Throckmorton, president; C. R. King, vice-president and assistant general manager; and M. F. Burns, vice-president and general sales manager.

#### All-American Mohawk Corp. North Tonawanda, N. Y.

All-American presents an all-superheterodyne line of radio receivers, employing pentode and multi-mu tubes in each chassis. The company also introduces an innovation, a "Lyric" radio-Wurlitzer piano combination for small homes and apartments.

And the company also introduces five models of Mohawk electric refrigerators. Distribution is to be through "present channels of distributors."

#### Allen-Hough Carryola Company Milwaukee, Wis.

Company's new product introduced at this time is a coin-operated midget-automatic phonograph which plays and automatically changes ten 10-inch records. The Carryola midget is so compact in size that it may be placed on top of store counters. Sells for \$195 list.

#### American Radiostat Corp. Hempstead, L. I., N. Y.

The American Stenode makes its first commercial appearance at the trade show. One of the features stressed in Stenode design is the practical elimination of background noises with a marked reduction in the effects of natural static. The entire selector circuit is concentrated in a single crystal controlled unit.

#### Audiola Has a \$37.50 Mantel Receiver

Four-tube midget with pentode and variable-mu and dynamic speaker at \$37.50 list. Also sold as a chassis with or without speaker at correspondingly low prices.

Other newly announced Audiolas are the 610 mantel receiver, with six tubes, including pentode, at \$49.95 list, with tubes.

Model 810, 8-tube superheterodyne mantel at \$65.00 list, with tubes. Model 612, 6-tube pentode console at \$65.00, with tubes. Model 812, 8-tube superheterodyne console at \$79.00, with tubes.

#### Bond Electric Corporation Jersey City, N. J.

Company's two new products are: Bond Electric Clocks, and Bond Flozon, for year 'round use in the automobile cooling system. Other products shown were: Bond radio tubes, radio batteries and flashlights.

#### Bud Radio, Inc. Cleveland, Ohio

Bud Radio, Inc., displayed a very complete line of radio accessories. Company expects soon to announce several products for the amateur television set builder.

#### Burgess Battery Company Chicago, Ill.

A new Radio B battery for automobile radio sets, which will withstand constant bumping and vibration was shown by Burgess. It is waterproof and will withstand hot and cold temperatures. It has special patented battery mix for longer life.

#### Colonial Radio Corporation Buffalo, N. Y.

This company exhibited a 4- and 5-tube T. R. F. model, a 6-tube superheterodyne midget, a 6-tube superheterodyne console, a 6-tube clock model and an 8-tube superheterodyne console. The superheterodyne models use pentode and multi-mu tubes.

#### Electrad, Inc. New York City

Electrad exhibited three models of Loftin-White amplifiers, suitable for amplification of signal from microphone, radio or electrical pick-up.

#### French Battery Company Madison, Wis.

French Battery exhibited its new Ray-O-Vac Silver Anniversary flashlights with automatic switch, which prevents accidental lighting; and a new radio "A" dry battery, designed for use with the new dry cell radio tubes, as well as other products, including the Autoradio "B" battery.

#### General Electric Company Bridgeport, Conn.

G. E. has two new models, the Junior and the Junior Console, now added to the line of large standard models. A General Electric clock in the G. E. Junior cabinet.

#### General Radio Company Cambridge, Mass.

Perhaps the most interesting item of this display was a new cathode ray tube. It is extremely valuable for the investigation of the wave-shape of alternating currents over a very wide frequency range.

Two new types of signal generators, one designed for checking modern "supers," and another, designed for portability, to cover a wide frequency range, were shown. This is particularly suitable for checking installations in police and aircraft service.

#### Gilby Wire Company Newark, N. J.

"Gilgrid No. 40," a new material used for grid wires and plates in place of ordinary materials, is the most recent development of the Gilby Wire Company, Newark, N. J. Officials of the company believe that their big contribution to the radio and electrical field is found in its fully equipped laboratory. Research work on new materials and processes is carried on continuously. The company's products consist of radio tube materials, etc., with the main bulk of business in the electrical resistance and heater fields.

#### Jesse French Mfg. Company Newcastle, Ind.

Jesse French Mfg. Co. introduced a "complete line of pentode tube superheterodyne sets." A seven-tube mantel set and a combination are included in this new line. In addition to the "super" line the company offers a five-tube TRF mantel set.

### CeCo Tubes of Latest Type

CeCo also has the complete new line of tubes, some of which were exclusively developed in the CeCo laboratories a number of years ago. Show visitors were supplied with some helpful literature at the CeCo booths. All of the characteristics of the new tubes are explained in this CeCo publicity.

□ □ □ □

### Centralab Controls for Every Purpose

Central Radio Laboratories exhibited the new line of "21 Jewel Dependability" volume controls which give smooth, noiseless and accurate performance. The popularity of Centralab is reflected in the news that more than twenty million receivers have been Centralab equipped.

□ □ □ □

### Aerovox Shows New Electrolytic Condensers

The dry type of electrolytic filter condenser as used in many of today's radio sets was shown by Aerovox, along with dozens of other types of condensers for all radio purposes.

□ □ □ □

### American Emblem Co. Has New Articles

In addition to the manufacture of escutcheons, knobs and other radio hardware, American Emblem Co. also exhibited some beautiful chrome plated specimens of new style electric clocks. Magnificent wall types, clocks with swivel mountings and bases in chrome and marble are part of the new line.

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### DeForest Radio Co. Shows Tubes and Television Equipment

The Jenkins Radiovision system was exhibited in the DeForest booths, where also was shown a complete line of all the new DeForest radio tubes, power tubes, transmitting tubes and tubes for many special purposes. The Jenkins Radiovision system was not in operation at the show but is being used successfully in the Eastern station of the Jenkins company.

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### Webster Power Amplifiers of Many Types

Two stage 45 power amplifiers at from \$57.50 up; choke and resistance units at \$6.00; 4.5 watt power amplifier at \$72.50; three stage '45 power amplifiers at \$110; power stage only at \$92.50; Model B-37-50 three stage amplifier with 250 tubes at \$150; another type at \$160; Model CP-74-50 self-contained three stage power amplifier at \$205, and the new Webster electric pick-up are some of the new things shown by Webster. Audio and input transformers of many types and sizes are also being manufactured.

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### Scovil Shows Special Condenser Designs

Many radio manufacturers use Scovil variable condensers. The complete line was exhibited at the show. A radio condenser specification book, in elaborate engineering form, is now ready for those who require this information.

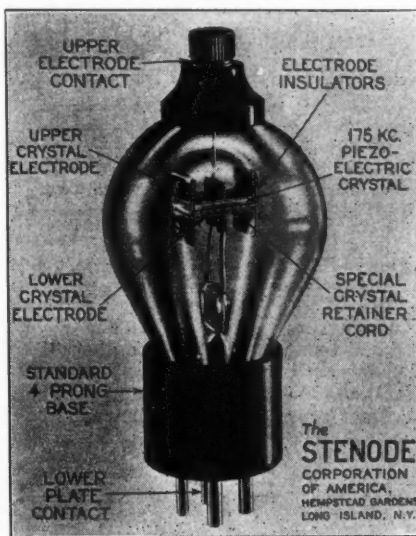
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### Cornish Wire Co. Shows Glass Lightning Arrester

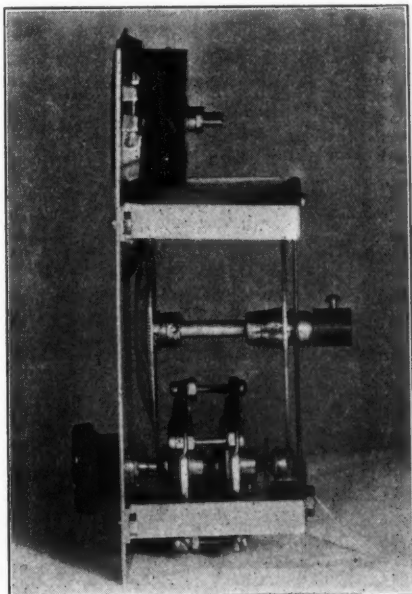
"Visible Vulcan" is the name of the new Cornish Wire Company's lightning arrester, made of crystal clear glass so that any shorts or defects can be detected easily. It is sold with a \$100 performance guarantee. List price 85c. Cornish also exhibited its line of antenna equipment.

## Crystal Tube Developed for Stenode Receiver

THE laboratories of the Stenode Corporation of America announce the development of a standard crystal tube for use in commercial models of the Stenode receiver. This tube, which will be manufactured independently by licensed manufacturers, has approximately the same over-all dimensions as the type 45 power tube, and is mounted on a standard UX base. The quartz crystal, upon which the phenomenal selectivity and remarkable tone quality of the Stenode receiver are said to depend, is mounted ruggedly in a medium vacuum, and is electrically terminated at the tube cap and the plate prong on the base. The vacuum is not essential to the satisfactory operation of the crystal circuit, and is employed principally as a matter of temperature insulation.



The heart of the Stenode—the quartz crystal tube, which contributes to the selectivity and tone quality of the receiver and replaces several complicated circuits.



Due to the simplicity of grinding quartz crystals resonating at approximately 175 k.c., and the ease of evacuating the tube, the crystal tube is said to be very economical to produce, representing a cost to the manufacturer and the final consumer considerably less than the component parts of the average circuits which it replaces.

### Insuline Has Television

A scanning disc television kit is now being marketed by Insuline. The company also exhibited the ICA Companion portable receiver at \$39.50, less tubes.

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### Talkiola Home Movie Machine

Talkiola Corporation exhibited a 16 mm. Talkiola, a combined talking picture machine and electric phonograph for home use. Operates from the light socket. Portable and deluxe console models.

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### Jackson Bell Shows 9-Tube Pentode Set

Multi-mu and pentode tubes, full tone control and a new wavelength reach as low as 180 meters are some of the new features found in the \$69.50 Jackson Bell Model 89. This mantel set has 9 tubes in a screen grid superheterodyne circuit. Uses three variable-mus and pentodes, 2 27's, 1 24 and 1 80. Full vision vernier dial.

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### Philco Has 7-Tube Midget Super at \$49.95 List

The new Philco line starts at the lowest prices in Philco radio history. The 7-tube mantel set, with tubes, retails for \$49.95 and is a superheterodyne.

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### Acme Wire Shows Parvolt Line

Parvolt long-life condensers, antenna wire, bare, enameled, solid and stranded, were exhibited by Acme Wire Co. at the trade show.

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### Jefferson Has Replacement Transformers

Jefferson Electric Company exhibited a large line of low priced replacement transformers and a complete line of audio and power transformers.

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### Readrite Service Kits Shown

Readrite Meter Works has a servicing kit in a metal case, containing three meters on a shelf. Space for tools, tubes and findings. \$33.00 list. Also a combination tester at \$35.00 list, counter tube checker at \$20.00 list, and a large and complete line of meters for every radio test purpose.

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### DeJur-Amsco Has New Superheterodyne Condenser

Ganged tuning and oscillator tracking condensers, special four-gang type for superheterodynes and a complete line of other variable condensers was exhibited by DeJur-Amsco. The new Varitor, a small fixed-variable capacitor, heavy duty rheostats, high gain I.F. units, dials and tuning accessories were also shown.

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### Weston Testers In Large Variety

Appliance testers, radio set testers, D. C. circuit testers, counter tube checkers and a complete line of portable and other types of meters for every conceivable purpose was exhibited by Weston.

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### Record Changer Shown By Electromatic Corporation

Electromatic record changers at \$90.00 list, complete, were on display. This new record changer plays and changes 10" and 12" records automatically. It has a 12" turntable, electric motor, pick-up, volume control and switch.

### Bosch Superheterodynes Shown

United American Bosch Corporation has a new "Personal Radio" table model at \$43.50, complete with tubes. Also a new superheterodyne line of consoles at \$69.50, \$89.50, \$99.50 and \$139. Pentodes, variable-mus, tone control and electrodynamic speaker are featured.

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### Brunswick Prices Begin at \$79.50

A new Brunswick mantel receiver at \$79.50 with variable-mu and pentode tubes and a superheterodyne circuit; a new high-boy, model 12, at \$99.50, with tubes; the model 16 console with 12" dynamic speaker at \$119.50, with tubes; the model 17 at \$149.50, with tubes; the radio with Panatrop model 33 at \$169.50; the model 24 superheterodyne console at \$169.50, with tubes; the model 25 superheterodyne console at \$225, and the Brunswick Automatic Panatrop with radio, model 42, in a magnificent console, at \$265, with tubes, completes the new Brunswick line. The sets use uni-selector, color tone control, power detector. Automatic control in all models except 11, 12 and 16.

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### Kester Solder Co.

The trade show exhibit of Kester Solder consisted of a showing of special solder for radio work.

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### Essenbee Has Short Wave Converter

The "Gem" short wave unit adapters by Essenbee sell for \$15.00 list. Suitable for local and distant police calls and other short-wave broadcasts. Range 40-200 meters, with special coils separately for the 40-85 or 85-200 meter band; two tubes, 27 or screen-grid. Also a smaller short-wave adapter Model No. 1 at \$10.00 list.



## The Low-Priced Mantel Receiver Finds Its Way Into the Office

NO longer is it necessary for the busy business man to deprive himself of the important daytime radio broadcasts. The 1931-1932 mantel receivers are priced so low as to open wide an entirely new field of merchandising. The artistry of cabinet design, the small size and the modern refinements such as pentodes and dynamic speakers, even in the lowest priced sets, should encourage every dealer to begin an aggressive office-to-office campaign and get his share of this heretofore unsold market.

Illustrated is the new Atwater-Kent compact, side by side with the telephone as an office utility.

### Five New Howard Sets

\$69.50 mantel set, superheterodyne with 3 variable-mus and one pentode; 7 tubes in all. Detachable drawer table \$10.00 additional. No. 3 compact console, same chassis as mantel set, \$89.50, with tubes. No. 35 console superheterodyne, 8 tubes, of which 2 are pentodes, \$99.50, with tubes. Model 40 console, superheterodyne, 8 tubes, with 2 pentodes, \$119.50, with tubes. No. 60 combination radio phonograph with automatic record changer and 8-tube superheterodyne chassis, \$259.50, with tubes.

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### Perryman Has All the New Tubes

More than two dozen types of Perryman tubes were shown. The new multi-mus and pentodes were there, along with the many special types of tubes. Show visitors were given a chart showing average characteristics of all Perryman tubes.

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### Dilecto Products Exhibited By Continental-Diamond Fibre

Dilector and Diamond Fibre fabrications, gears, mountings and a very large variety of other Dilecto products were shown.

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### Freed-Eisemann Sets Shown By Freed

Freed Television and Radio Corporation exhibited a new television kit and the new Freed-Eisemann mantel type radio at \$49.50 list. This set is made for either A.C. or D.C. operation. The prices are the same. The set has an 8-tube chassis with superheterodyne circuit. Two variable-mus and a pentode are used. List prices do not include tubes.

### Hammarlund Shows Many Condensers

Hammarlund midget condensers, small fixed condensers and many types of special condensers for manufacturers were shown by Hammarlund. The new "midget" condenser can be had in either "midline" or straight capacity types.

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### Pfanstiehl Private Brand Midget

A mantel set sold for less than \$30.00 with tubes. Can also be had for D.C. at slight additional cost.

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### Magnavox Has Wider Line of Speakers and Condensers

The new Magnavox dynamic symphony series, the Magnavox dynamic midget speaker line and the Magnavox heavy-duty Mastadon speakers were shown. Complete specification sheets on all speakers were distributed to show visitors. The new Mershon electrolytic condensers were also exhibited by Magnavox under the name of Electro Formation, Inc., a Magnavox subsidiary. These Mershon condensers are made in sizes from 4 mfd. to 72 mfd. The list price of the 4 mfd. is \$1.90. The 72 mfd. sells for \$10.00.

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### John E. Fast Co. Shows Condenser Line

Fixed and by-pass condensers and condensers of small size for many purposes were shown by John E. Fast Co. Uncased condenser windings for power pack repairs are also part of the Fast line.

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### Sylvania Has Novel Tube Checker

An elaborate counter style tube checker is available to dealers from the Sylvania people as part of a new sales and merchandising service to help sell more tubes. Sylvania also has the complete new line of the newest types of multi-mus, pentodes, etc. A large chart showing time schedules for national broadcasting programs is ready for the dealer. The program sponsors are listed, along with the time and station calls.

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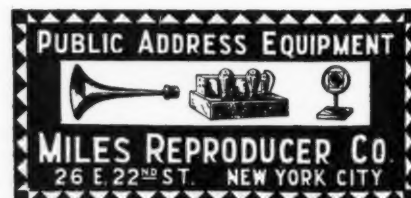
### Tobe Deutschmann Shows Complete Filterette Line

Mr. Tobe C. Deutschmann was at the trade show to supervise the showing of the new Filterettes. Tobe is now manufacturing interference elimination devices for practically every type of electrical apparatus which may cause interference to radio reception. Tobe engineers were also at the show to explain the new devices to the show visitors. It is said that Tobe has spent a small fortune in engineering and publicity work to help make radio reception better for the listener.

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### Hoyt Electrical Instruments Are Shown

Tube checkers at from \$19.60 to \$27.60; Analyzer at \$58.50; Test Oscillator at \$62.50 and a large variety of test meters were shown by Hoyt. The new Counter Tube Checker is housed in a massive cabinet. Burton-Rogers Company is sales representative for the Hoyt line.



# The key to every radio problem

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Illustrations. Weight 3 lbs.  
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Whereas the original edition (1927) consisted of only 160 pages, the new 1931 Second Edition is a volume of 352 pages. It is a large book, 9 inches wide by 12 inches high, and weighs three pounds. There are 2,201 radio definitions, A B C indexed like an ordinary dictionary, making every bit of radio information you want "findable"; 1,253 detailed technical illustrations; 34 tables and charts, 24 pages of Appendix, etc. The binding is flexible red morocco-keratol, with title gold-stamped on cover and backbone. The text is printed on durable, fine ledger

paper, and the loose-leaf construction permits new material, such as notes, addenda data, etc., to be added from time to time.

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It gives you an explanation of every word used in radio. These explanations—or, rather, definitions—are not brief outline information like those of an ordinary dictionary, but they give in fullest detail, and at considerable length, the meaning and application of every word, phrase, general and special term used in the science of radio. They are written in plain, everyday English, easily understood by anyone.

Practically every definition in the book is illustrated by drawings, photographs, diagrams, or charts. All you need to do is to look up the word or phrase about which you are in doubt, under its proper heading. ALL THE SUBJECT MATTER IS ARRANGED IN ALPHABETICAL ORDER.

Numerous tables, charts, and maps are distributed throughout the text. A large section of the Appendix contains information of commercial value, such as lists of all radio receivers, their manufacturers, trade names, tubes used, styles, etc. There are charts of tube-socket lay-outs of all makes of sets; broadcast stations listed by wavelengths, call letters, towns and states, etc.

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I have looked over the copy on the new Radio Encyclopedia and desire to express my pleasure in same and congratulate you on the excellence of this volume.—Dr. Lee de Forest.

A detailed treatment is given to all kinds of apparatus used in radio.—Nashville Banner.

The Radio Encyclopedia is an over-size volume of radio information well printed and fully illustrated. It contains also biographical data and a large number of useful tables, charts and drawings. The book offers the radio man a chance to talk intelligently about his pet hobby.—Bulletin of the New York Public Library, N. Y.

discoveries, and research, made radio what it is today. Large sections of the text are devoted to such important subjects as television, trouble-shooting, servicing, short-wave reception and transmission.

Full descriptions are given of all vacuum tubes, the theory of their construction, characteristics, testing, and manufacturing.

The latest inventions, such as the Radio Knife, and locating treasures and ores by radio, are as fully described by word and picture as are the old-time Marconi coherers and detectors.

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# Filterette

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VOL. 2, NO. 7

JULY, 1931

CANTON, MASS.

## Analysis of Motor Generator and Synchronous Converter Interference

### Filterizing of This Equipment Serious Problem in Direct Current Districts

(Continued from June issue)

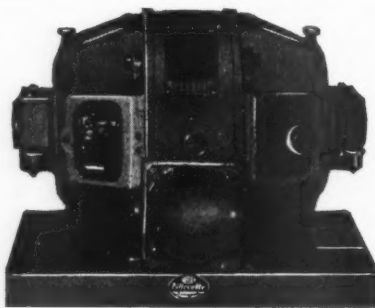
When the alternator field is connected at the "Line" side of the Filterette in the motor circuit, as shown in Figure 2, there is little likelihood that interference will be carried on the rheostat leads.

#### Choice of Filterettes

In choosing Filterettes for application to a motor-generator set, the following data must be determined:

1. The voltage of the D. C. line.
2. The number of amperes drawn by the motor.
3. The voltage output of the alternator.
4. The number of amperes delivered by the alternator.

With this information available, Filterettes capable of being operated continuously at the voltage of the motor and generator, and capable of carrying the



*Special Filterette for application to small Inverted Synchronous Converters. Designed for use with machine rated at not more than 250 K.V.A.*

maximum current flowing in the motor and generator circuits, may be chosen from the chart, Figure 4.

MOTOR		GENERATOR		Circuit Data
Voltage	Filterette	Voltage	Filterette	
32	131	110	110	All wiring in conduit or BX. Motor and generator connected to D. C. and A. C. lines by means of attachment cords and plug.
110	110	110	110	
220	221	110	110	
110	110-PO	110	110-PL	

**Figure 4**  
Chart showing common types of motor-generator sets, and the Filterettes for suppressing the interference being created.

**S**UMMARIZING the suppression of radio interference created by a motor-generator set used (as outlined in the June Filterette section) for converting direct current to alternating current it may be said that interference originates at the brushes and commutator of the D. C. motor; it is fed back on the D. C. lines; it is inductively and capacitively coupled to the alternator

and thus impressed on the A. C. output of the machine; it may be radiated from both the D. C. and A. C. wiring connected to the motor-generator; and it may enter the receiver through its antenna system or its power connection.

To confine the interference as closely as possible to the point at which it originates, it is necessary to apply Filterettes to both the motor and the alter-

nator, and in some cases to connect a Filterette in the field rheostat circuit.

In choosing Filterettes for this purpose due consideration must be given the voltage and amperage of the apparatus in order that the Filterettes used may be capable of operating for extended periods of time without danger of overheating or breakdown. All Filterettes used should meet the requirements of the National Electric Code.

In the installation of these Filterettes it must be remembered that, except in the case of plug-in units, all wiring between the Filterettes and interfering apparatus should be carried in metallic conduit, either rigid or flexible; in every case connecting leads must be kept short; the return connections must be short and must be connected to cleaned parts of the apparatus frame.

#### Synchronous Converter Presents Difficult Problem

The filtering of small inverted synchronous converters used to obtain alternating current for the operation of A. C. powered radio receivers in D. C. districts is a somewhat different problem from the case of filterizing motor-generator equipment used for radio purposes. Consideration of the operating principles involved with both motor-generator and converter equipment will show why this is the case.

A synchronous converter is an electrical machine having one field and one armature, the armature being connected both to slip rings and commutator bars. The machine is designed to be operated at synchronous speed. If it is driven by a prime mover, both direct current and alternating current may be obtained

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from the armature; if it is operated at synchronous speed, as an A. C. motor, direct current may be obtained at the commutator; if it is operated as a D. C. motor, alternating current may be obtained at the slip rings. It is the last named operation that is of primary interest to radio dealers and service men, since the inverted synchronous converter is extensively used, not only for changing direct current to alternating current for operating radio receivers and electric phonographs, but also for other purposes not directly associated with radio, but nevertheless likely to be encountered by the radio dealer.

#### Difference Between Motor-Generator and Synchronous Converter

There are a number of essential differences between a motor-generator and a synchronous converter, particularly as these machines are applied to radio work. The A. C. and D. C. circuits of a motor-generator are largely independent of each other. The motor and generator have individual armatures, as well as separate fields. Thus the radio interference which originates in the D. C. motor circuit may enter the A. C. circuit only by induction, or by capacitive coupling.

Such is not the case, however, with the inverted synchronous converter. The radio interference originating in the D. C. circuit of this type of equipment is connected by direct wire, to the A. C. circuit, since the converter is so constructed that alternating current and direct current flow in the same armature windings (Figure 1). Consequently, there is usually superimposed on the A. C. output of a D. C. to A. C. converter, more or less radio interference due to the normal operation of the D. C. side of the machine.

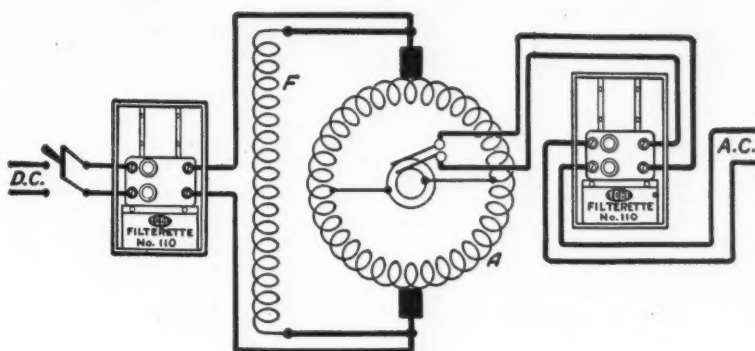
#### Distribution of Interference

To determine the procedure to be followed in overcoming converter interference, it is necessary first to consider the manner in which the interference is created and the way it reaches the receiver. When an inverted synchronous converter, supplying alternating current to a radio receiver is in good electrical and mechanical condition, interference should originate only in the D. C. circuit. This interference, due to the making and breaking of electrical circuits, is conductively impressed on the D. C. supply lines and may travel along these lines for a considerable distance. Being radiated from the D. C. lines, the interference may be picked up by the antenna system of the receiver connected to the converter, and may also affect other

receivers whose antenna systems are in any way associated with the D. C. circuit supplying the converter.

Since the A. C. output of the converter is directly connected to the D. C. circuit in which the interference originates, it is obvious that the alternating current wiring system supplied by the converter will carry interference as does the direct current wiring system which supplies power to the converter. The re-

marked "Load." If a double-pole line switch is used, the two leads from the switch blades should then be connected to the Filterette terminals marked "Line." If a single-pole switch is used, one lead from the switch should be connected to one of the "Line" terminals of the Filterette and the remaining Filterette "Line" terminal should be connected to the opposite side of the D. C. line.



ceiver, being directly connected to the interference-distributing A.C. lines, will not only be affected by the radiation of interferences from these lines, but may also be affected by electrical disturbances which enter it through the power supply unit.

#### D. C. and A. C. Circuits Must Be Filterized

Thus it is evident that, if satisfactory radio reception is to be obtained from a receiver used with an inverted synchronous converter, both the direct current and the alternating current circuits must be filterized. Figure 1 shows the correct method of connecting two inductive-capacitive Filterettes in a converter circuit. In this diagram the converter is a one-quarter kilowatt unit having a D. C. input of 3.2 amperes at 115 volts and an A. C. output of 2.3 amperes at 110 volts.

For a machine of this rating, Tobe Filterette number 110 rated at 110 volts 5 amperes A. C. or D. C. is the correct inductive-capacitive type Filterette to use. One of these Filterettes should be connected in series with both D. C. input leads to the converter and the other should be connected in series with both A. C. output leads as indicated in Figure 1.

#### Installing Filterette in D. C. Circuit

In applying a Filterette at the D. C. side of the converter, the two D. C. input leads of the converter should be connected to the Filterette terminals

All connecting leads must be carried in conduit, either flexible or rigid, if satisfactory results are to be obtained from the Filterette installation. (Note: BX may be classified as flexible conduit). The conduit must be bonded to the Filterette cabinet as well as to the converter frame, and the connection to the converter should be so made that none of the wiring is exposed. Under certain conditions enough interference to minimize the effect of Filterettes may be radiated from as little as two inches of exposed wiring. Too much stress cannot, therefore, be laid on the importance of carrying, in conduit, all wires on which interference may be traveling. For best results the distance between the Filterette and the converter should not exceed eight inches.

If for any reason it is impossible to use conduit or BX when installing the Filterette, care must be taken that the input and output leads of the Filterette are kept separate. If these leads are allowed to parallel each other, interference will be inductively bypassed around the Filterette, thus nullifying its effects.

To complete the installation of the Filterette at the D. C. side of the converter, the return lead (not shown in the wiring diagram) must be connected to a carefully cleaned part of the converter frame.

(To be concluded in the August issue)

## TOBE DEUTSCHMANN CORPORATION

Filterette Division • CANTON, MASSACHUSETTS

*The Acknowledged Authority on Radio Interference—Makers of FILTERETTES, the Accepted Remedy*

SAN FRANCISCO, CALIF.  
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This Business Coupe is especially designed for the professional and business man. It is ideal for fleet users. The rear luggage compartment has a capacity of more than 10,000 cubic inches. Buyers of this type of car want the most for their money; they demand the greatest efficiency, durability and comfort. This Auburn Business Coupe offers advantages obtainable in no other car. Straight Eight 98 H.P. motor; 127" wheelbase; automatic chassis lubrication; X-type cross member in twist-proof frame; Silent-Constant mesh transmission; a 42" door; and many other features that make its value outstanding. Custom models include L. G. S. Free Wheeling. Ask your Auburn dealer, or write us. **\$995** f. o. b. factory. Rumble seat additional.

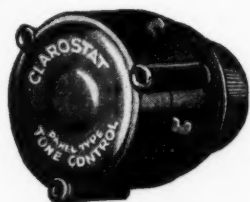
**AUBURN**  
POWERED BY LYCOMING

The car illustrated above is the Business Man's Coupe, Silent-Constant Mesh in Standard Models. All Custom Models include Free Wheeling. Custom models 8-98A: 5-passenger, 2-door Brougham \$1145; Business Man's Coupe \$1195; Convertible Cabriolet \$1245; 4-door Full Sedan \$1195; Convertible Phaeton Sedan \$1345. All Custom Models include Free Wheeling. Standard models 8-98: 5-passenger, 2-door Brougham \$945; 4-door Full Sedan \$995; Convertible Cabriolet \$1045; Convertible Phaeton Sedan \$1145; Business Man's Coupe \$995; all prices f. o. b. factory. Equipment other than standard, at extra cost. AUBURN AUTOMOBILE COMPANY, AUBURN, INDIANA. Prices subject to change without notice.

## Short Wave Tone

Here is a new kink for the S.W. enthusiast. Cut out background noises and mushy tone with the Clarostat Tone Control panel mounting type.

Just drill one hole and run two wires to radio transformer—that's all.



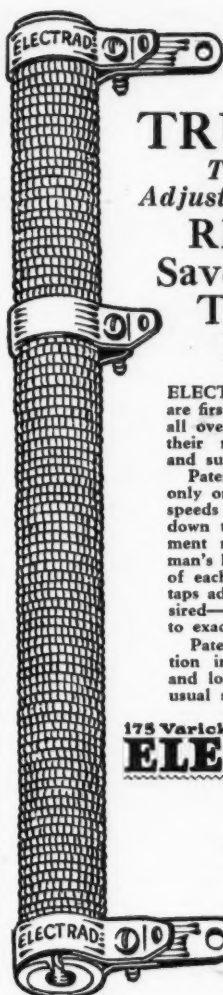
Regularly supplied without wires or adapters, \$1.80.

Regular model for ordinary power tubes.

Pentode model for Pentode output.

CLAROSTAT MFG. CO., Inc.  
285 North 6th St., Brooklyn, N.Y.

**CLAROSTAT**



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Patented sliding clip, found only on TRUVOLT resistors, speeds service work and cuts down the number of replacement resistors in the service man's kit. The resistance value of each unit can be changed, taps added or removed, as desired—and speedily adjusted to exact values.

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is the ideal spot to hold conventions . . . because of its many places of historical interest . . . its wonderful Lake Front advantages . . . and its ability to handle crowds without congestion.

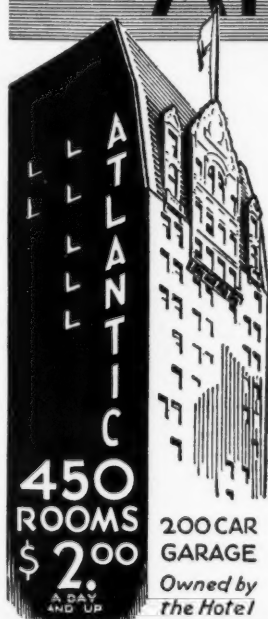
The place to make your home while in Chicago is THE NEW BISMARCK. Just a few blocks from the Merchandise Mart and the Wholesale District . . . on La Salle, the great financial street . . . in the theatre and amusement belt . . . and within easy reach of all points of civic interest.

It's the one Chicago hotel where your comfort and pleasure are the first consideration of the management. Luxurious lounges and rest rooms . . . Quiet, outside rooms, with comfortable beds . . . the best of food and service . . . and every modern convenience. All dining rooms air cooled.

Rooms . . . . . \$2.50 up.  
With Bath . . . . \$3.50 up.

Send for booklet with map of Downtown Chicago

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FAMOUS  
FOR  
GERMAN  
COOKING  
*Send for Copy of  
Chef's Recipes  
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MOST CENTRALLY LOCATED  
ON CLARK STREET—NEAR  
JACKSON BOULEVARD

ONE BLOCK FROM THE  
LA SALLE ST. STATION,  
POST OFFICE AND  
BOARD OF TRADE

ATKINSON SERVICE

**CHICAGO**

Tell them you saw it in RADIO

## NEW BISMARCK HOTEL RANDOLPH at LaSALLE CHICAGO

## RADIOADS

A Classified Advertising Section Read by  
Better Buyers

RATES: 8 CENTS PER WORD  
\$6.00 PER DISPLAY INCH

Radioads for the August Issue Should Reach Us  
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## POWER PACK REPAIRING

WHOLESALE RADIO SERVICE, Power Pack rebuilding, Shop equipment built and repaired, Coils matched, All kinds of Solenoid winding. B & B Radio Lab., 509 Terry Ave., North, Seattle, Wash.

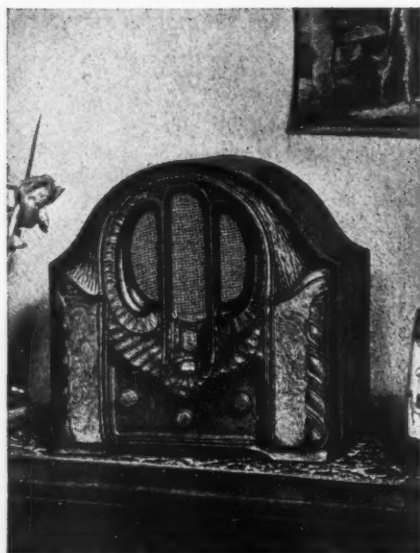
POWER PACK SERVICE and transformer winding. Quick service and fair prices for all types of power transformers and chokes. Condenser blocks replaced. Guaranteed work. California Radio Laboratories, 2523 South Hill St., Los Angeles, Calif.

COMPLETE POWER-PACK SERVICE—Transformers rewound, Condenser blocks repaired. Resistors repaired or duplicated. Specially equipped shop. Work guaranteed. Clark Brothers Radio Co., Albia, Iowa.

WHOLESALE DISCOUNTS. Approved parts. \$50,000.00 stock. Over four pounds, catalog, circuits, data, 50c. prepaid (outside U. S., \$1.00). Weekly (new items, test reports), bulletins, 20 weeks, \$1.00. Experimenters, 56-page house organ, 25c., prepaid. Kladag Radio Laboratories (established 1920, over 4,000 radiowise customers), Kent, Ohio.

# CROSLEY

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**The Crosley SUPER BUDDY BOY**  
The biggest radio in performance ever condensed into so small a space. Incorporates Pentode Output—Exponential or variable MU tubes—Dynamic Speaker—Illuminated Angular Vision Dial. Sells at the low price of **\$65<sup>00</sup>**  
Complete With Tubes and Tennaboard  
Also made for Direct Current

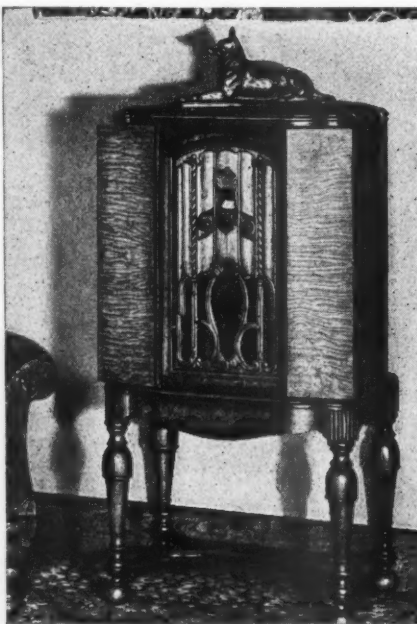


**The Crosley SONGSTER**  
An exquisitely designed console model. Same type chassis as The SUPER BUDDY BOY. Finished in genuine Walnut and hand carved effect. Amazingly low priced at... **\$79<sup>50</sup>**  
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Never has there been a line of Radio Receivers So Complete . . . So Exquisitely Beautiful . . . So Utterly Superlative in Performance . . . So Low-Priced, as the Sensational **NEW** Crosley Line.



**The Crosley MUSICALE**  
A console model incorporating all The Crosley SUPER BUDDY BOY Pentode Superheterodyne features plus auditorium type speaker. Sells at... **\$94<sup>50</sup>**  
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**The Crosley MINSTREL**  
A 10-tube Superheterodyne housed in an exquisitely beautiful cabinet. The top and sides are of walnut veneer. Pilasters and legs of walnut—the doors are of bird's-eye maple. Sells at... **\$129<sup>50</sup>**  
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YOU'RE THERE WITH A CROSLEY

# CROSLEY RADIO

Tell them you saw it in RADIO

# Introduces

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PENTODE tubes — Exponential or Variable MU tubes — Superheterodyne Circuit — Heterotonal Response (Static and Tone Control) — Illuminated Angular Vision Dial — exquisitely beautiful, newly designed cabinets — they're all found in this utterly beautiful and sensational new Crosley line. This marvelous line not only includes each and every one of the very latest refinements of modern radio but it also incorporates many features exclusive to Crosley and available only in the Crosley line. Small size sets — larger sets — a clock model — round out this line to make it the most complete and satisfying that radio has ever known. And yet every one of these amazing radio receivers, in spite

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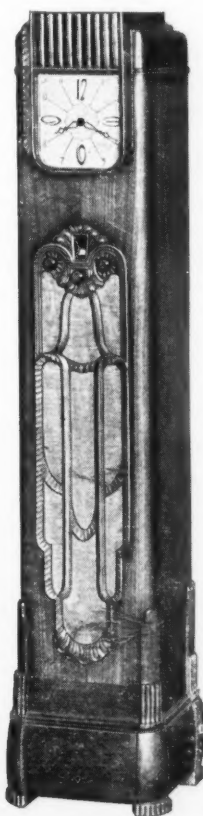
**The Crosley SHOW BOY**

A radio receiver of distinctly individual beauty and superlative performance. Incorporates Screen Grid tubes — Pentode Output — Exponential or Variable MU tubes — Dynamic Speaker — Illuminated Angular Vision Dial — One-piece Cabinet — \$39<sup>75</sup> priced at.....

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Also made for Direct Current

The Crosley BATTERY SHOW BOY sells for \$47.50, complete with tubes, less batteries.



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\$99<sup>50</sup>

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**The Crosley SONNETEER**

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Complete With Tubes and Tennaboard

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YOU'RE THERE WITH A CROSLY

# CROSLY RADIO

Exceptional Offer  
for Progressive  
Radio Dealers...



## ...GET THIS UP-TO-DATE **TEST BOARD**

*Records Prove it often DOUBLES and TRIPLES Tube Sales; Brings New Customers into your Store; Creates Live Prospects for Radio Sets as well as Tubes; Establishes your Store as the Local Radio Headquarters.*

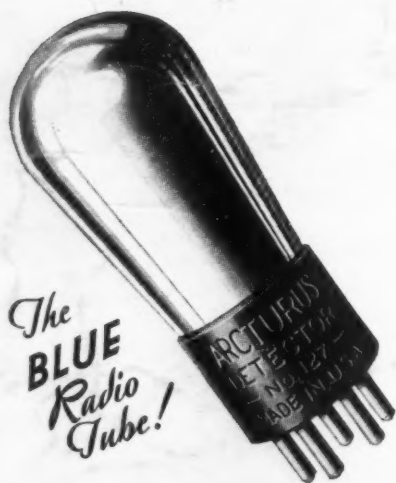
These vital advantages are the result of testing tubes, *free of charge*, in a manner that is easily understood, obviously correct, and convincing to any radio set owner.

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Testing equipment such as this is often sold at \$150.00 to \$200.00, or more. Yet Arcturus now helps *any* progressive radio dealer get a Test Board, and many Arcturus jobbers have a plan enabling dealers to *earn* one by tube purchases. You can have one of these business-building Tube Testers working for you *next week*, bringing you new business and extra profits.

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Arcturus Radio  
Tube Co.  
Newark, N.J.



Here is the latest and best way of boosting your tube sales and bringing new pep to your business every month in the year—an accurate and easily operated TUBE TEST BOARD that clearly shows the difference between fresh and weak tubes.

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"The TUBE with the LIFELIKE Tone"

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I am interested in your plan for selling more tubes with your Tube Test Board. Tell me how I can get one of these Test Boards, and use it to best advantage.

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